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The Southern Railway Dividend

A VERY favourable impression has been made by the announcement of the first of the four main-line home railway dividends. In their official announcement, the directors of the Southern Railway state that there was an increase of £1,312,769 in gross receipts for last year as compared with the previous year, and an increase in net revenue of £325,964. These results are reflected in the recommendation of a dividend of 1½ per cent. for the year on the deferred ordinary stock against a payment of ½ per cent. for 1936. Moreover, the balance carried forward will then show a slight increase at £226,804 compared with the £220,809 brought into the account. This return of 1½ per cent. is the largest since 1929 and came as a pleasant surprise to the market, for even the most optimistic had not hoped for a payment of more than 1¼ per cent., and, in fact, 1 per cent. was the more general estimate. Of course, market expectations are based very largely upon the public weekly traffic returns, and for fifty-two weeks of 1937 these showed a total gross increase of £731,000, or 3·49 per cent. over the previous year. These returns do not, of course, include ancillary and miscellaneous receipts, but a gross increase for the year of £1,312,769 is certainly greater than was generally expected, and the difference between the two figures of £581,769 makes the full accounts awaited with more than usual interest. It will probably be found that the explanation lies in the remarkable extension of the traffic conveyed by the company's cross-Channel steamboats, receipts from which are not included in the weekly traffic returns. Returns on the preferred ordinary and deferred ordinary stocks for the past nine years have been as follow:—

	1929	1930	1931	1932	1933	1934	1935	1936	1937
	%	%	%	%	%	%	%	%	%
Pref. Ord. ..	5	5	4	1	3	4	5	5	5
Def. Ord. ..	2½	1¼	Nil.	Nil.	Nil.	Nil.	Nil.	½	1½

It need hardly be added that the Southern Railway occupies a somewhat different position from the remaining three main-line companies—indeed they have all their separate problems and characteristics—and the optimism which has resulted from the Southern Railway announcement should be tempered by the considerations so clearly expressed a week or two ago by Sir William Wood, but there is no gainsaying that for the Southern Railway to make the best showing for nine years is not only a matter upon which Southern Railway stockholders have reason to congratulate themselves, but is also a welcome sign of the gradual emergence of the whole British railway industry from a depression trough of unprecedented depth.

* * * *

The Week's Traffics

Precise comparison between the week's traffics during this year with those of the corresponding period of last year is of course affected by the two-fold action of the five per cent. increase, which, while it increases individual receipts may have the effect of keeping from the railways certain classes of traffic. Although the aggregate for the four main-line railways is less than five per cent. above the corresponding figure for last year, the increase is sufficiently substantial to suggest that the companies have not lost such a large volume of traffic by reason of the increase in charges as was feared in some quarters. A slight trade decline may prove to be a contributory factor.

	5th Week				Year to date	
	Pass., &c.	Goods, &c.	Coal, &c.	Total	Inc. or Dec	
	£	£	£	£	£	%
L.M.S.R. ..	+ 21,000	+ 14,000	+ 12,000	+ 47,000	+ 264,000	+ 4·73
L.N.E.R. ..	+ 9,000	+ 38,000	+ 34,000	+ 81,000	+ 224,000	+ 5·44
G.W.R. ..	+ 5,000	+ 15,000	+ 7,000	+ 27,000	+ 108,000	+ 4·68
S.R. ..	+ 8,000	+ 3,000	+ 8,000	+ 19,000	+ 55,000	+ 3·23

Coal contributes £61,000, merchandise £70,000, and passenger train traffic £43,000 to the combined increase of £174,000 in receipts shown by the four main-line railways for the past week. The combined increase for the year to date is £651,000 on aggregate takings of £14,358,000 or 4·75 per cent.

* * * *

Organised Stockholders

The railway meeting season is fast coming upon us, and with it there appears a special number of the journal devoted to the interests of what company chairmen call "the other side of the table." *The Railway Stockholder* for February forms a review of the history, work, and outlook of the British Railway Stockholders Union Limited, with an introduction by Mr. William Whitelaw, Chairman of the L.N.E.R., in which the influence that could be wielded by such a body had it a membership of 100,000, and an income of £10,000, is very forcibly stated. In another message to all railway stockholders, Sir Charles Stuart-Williams, Chairman of the union, remarks that its present membership is less than 2 per cent. of the estimated half-million interests represented by well over 800,000 holdings of British railway shares of all kinds. Mr. Ashley Brown, the General Secretary, also contributes an article, in which he records the foundation of the Railway Reform League in 1931, its amalgamation with other stockholders' organisations in 1932 to form the present union, and its subsequent development. He concludes by saying: "I am certain that the day will come, and probably sooner than is generally anticipated, when the ability of the stockholders to defend their interests will be largely determined by the strength of this association."

XUM

L.M.S.R. Station Car Parks Prove Popular

Increasing use of railway station yards and approaches, as a contribution to the car-parking problem, is reflected in the rapid growth of such facilities on the L.M.S.R. Whereas seven years ago there were only 79 car parks at L.M.S.R. stations, the total has now increased to 1,033, of which 904 are in England and Wales, and 129 in Scotland. This increase is due to the growing popularity of railway car parks, which are provided at both passenger and goods stations where there is suitable room, and which, incidentally, assist in some measure in solving road traffic problems. The daily charge for parking at stations in or near large towns or industrial areas is 1s. for motorcars and 6d. for motor cycles (solo or combination) and three-wheeled vehicles. In "rural" areas, where space is usually less valuable, these charges are halved. The station car park has proved a great boon to the regular passenger, who drives to the station in the morning, leaves his car in the park all day, and picks it up again in the evening on his return. Season tickets are issued for this purpose at reduced rates.

* * * *

Overseas Railway Traffics

The Buenos Ayres & Pacific Railway decrease of £19,293 in the past two weeks is £8,002 smaller than that recorded in the preceding fortnight, but the Great Southern has not repeated its recovery of the 29th week, losing a total of £32,383 in the 31st and 32nd. On the Buenos Ayres Western the fortnight brought a combined decline of £40,508, so that the period under review has seen this company join the other two showing deficits on the aggregate. The Argentine North Eastern, however, is still on the right side, and by the 32nd week had improved its aggregate comparison with last year by £2,488 compared with that recorded in the 28th.

	No. of Week	Weekly Traffics	Inc. or Decrease	Aggregate Traffic	Inc. or Decrease
		£	£	£	£
Buenos Ayres & Pacific ..	32nd	106,514	– 9,491	2,624,941	– 43,774
Buenos Ayres Great Southern ..	32nd	238,151	– 11,725	4,461,289	+ 170,142
Buenos Ayres Western	32nd	44,417	– 17,059	1,456,018	– 32,335
Central Argentine	32nd	121,461	– 64,857	4,024,549	– 666,806
Canadian Pacific	5th	658,400	+ 8,000	2,063,000	+ 24,200
Bombay, Baroda & Central India	45th	293,025	– 46,950	7,337,025	+ 97,125

The Bombay, Baroda & Central India Railway aggregate increase is £46,950 smaller than at the 43rd week.

* * * *

South African Accident Statistics

The recently issued report of the South African Railways and Harbours for the year ended March 31, 1937, gives prominence to an analysis of the number of casualties in train accidents involving railway passengers and railway staff in relation to passenger train miles and passenger journeys and gross train miles, respectively. Public attention was focused on railway accidents towards the end of 1936 and more especially after the unfortunate accident near Vlakteplaats on December 21, 1936. Were the casualties in this accident excluded, however, the past year would rank as one of the best ever experienced on the railways. As it was, however, only six passengers lost their lives in train accidents, and passenger casualties in relation to passenger train miles during 1936-37 reflect ratios of 0·329 fatalities and 0·931 injuries per million passenger train miles, respectively. This represents a distinct improvement even on the excellent safety average for the 27 years since Union, comparing with 0·611 killed and 3·305 injured during the period 1910 to 1936-37. In actual figures the best periods as regards passenger fatalities since Union, were the calendar years 1912 and 1913 and the working years 1922-23, 1925-26, 1931-32, 1932-33, 1934-35, and 1935-36 when not a single person was killed in a train accident. The average number killed each year since Union was 6·9, over the last ten years was 6·5, and over the last five years 4. In the same period the average annual figures work out at 0·06 killed and 0·577 injured per million passenger journeys, compared with which are the figures of 0·062 and 0·176, respectively, for 1936-37. The yearly average numbers of staff killed and injured since Union were 4·4 and 18·3, respectively, while during the past year there were only five fatalities and six injuries.

* * * *

The G.W.R. London-Birmingham Route

In our issue of October 22 last we published an editorial note regarding a letter from a correspondent, who had suggested that the Great Western Railway might accelerate its services between London and Birmingham, and that there was no technical reason why a time of 105 min. for the 110·6 miles should not be observed by the fastest non-stop trains. In our comment we stated that whilst a schedule of 105 min. was not impossible on technical grounds, it would be practicable with present average loads only by travelling at high speeds over sections of the route which are not suitable, owing to the configuration of the line, for exceptionally fast running. Since then we have received further correspondence on the subject, which indicates that the writers of the letters may not be fully acquainted with the physical characteristics of the G.W.R. London—Birmingham route. On page 258A of this issue we reproduce a diagram showing its gradients and curves, together with the nine permanent speed restrictions which are imposed on trains in each direction; on this have been plotted curves showing the speeds necessary in maintaining the present 2-hr. schedule with 400-ton loads, and the speeds which would be required if a non-stop schedule were introduced on a 105-min. basis. Such is the difficulty of the route that a limitation of load to 300 tons, even with a "King" class locomotive, would be essential for timekeeping with a schedule of 105 min.

* * * *

Drivers and Firemen

The current (February) issue of *The Locomotive Journal*, the monthly official organ of the Associated Society of Locomotive Engineers and Firemen, begins the fifty-first year of publication, and, therefore, this issue is a jubilee number. In February, 1888, that journal was a modest publication of 36 pages issued at 2d. a copy, under the title of *Locomotive Engineers' and Firemen's Monthly Journal*, but the first leader, which is now reproduced in facsimile, was full of optimism and remarked that its American counterpart brought in profits to its association amounting to $7,000 a year. The object of the new publication was stated as being "to open up a means of communication between locomotive enginemen and firemen and the public, and its columns will be open to any contributor, providing he keeps from personalities and matter that is likely to provoke animosity." A resolution was recorded in the first issue stating that the society viewed with regret and alarm the fact that long hours of duty on railways appeared to be on the increase, and expressed the opinion (1) that ten hours a day of railway work was sufficient; (2) that eight or nine hours' rest should be arranged between each term of duty; and (3) that eight hours at a stretch in a signal box should be considered sufficient, and that six hours at large junctions was quite long enough for signalmen to work without rest. As the present Editor says, in an accompanying note, this was the period when the eight-hour working day and forty-eight-hour working week was simply a whisper, and it was 39 years after the society was established (namely, on February 1, 1919) that the eight-hour day became a reality.

L.N.E.R. Cruises for 1938

The " rest and change " that used to be a popular prescription for the work-weary is being rapidly supplanted by the cruise, which is always a change, and may be as much of a rest as the cruiser wishes to make it. Railways, of course, are now represented in this profitable travel market, and the L.N.E.R. cruising programme for 1938 caters for various requirements in the matters of expense and time. As recorded last week, the Northern Belle will make three cruises of a week's duration to the Scottish Highlands, also giving special facilities for visiting the Empire Exhibition at Glasgow. Departures from King's Cross will be on June 3, 17, and 24. Travellers from the Continent can book for the Northern Belle cruises at the Hook of Holland, Antwerp, or Flushing at an extra cost of £5, this including the sea passage to and from Harwich, and a sightseeing tour of London. Two cruising trains for Boy Scouts are also to be run, one leaving London for Fort William on April 17, and a trip to London for Scottish Scouts from Edinburgh on April 20. The latter train will return to Scotland *via* Cambridge, Norwich, and Lincoln. Short sea cruises from Harwich to Continental ports and cities will be given at week-ends by the L.N.E.R. steamer *Vienna*.

* * * *

German Railway Safety in 1937

Statements have lately appeared in the non-technical press that a great many accidents occurred last year on the German State Railway and that the general level of safety was deteriorating, in explanation of which certain " facts " were advanced having no conceivable relation to the subject. The misconception appears to have been due, as is often the case, to wrong interpretation of some percentage figures, published in *Die Reichsbahn* for January 5 in the course of a review of the year's working. The year 1936 had exceptionally low accident figures, but those for 1937 cannot be said to represent an unsatisfactory condition, either alone or compared with the results on other railways, although mere percentage increase figures might give a different impression. There were 20 persons killed in train accidents that year, the majority of them in the derailment of a special train at Holzheim on September 5, due, it is said, to a permanent way fault. How many persons lose their lives in a particular accident has often little directly to do with the cause, and regrettable as is any casualty list an isolated high one is no indication of the safety of train working as a whole. A lower figure may actually accompany greater carelessness and more accidents. In Germany last year there were 3·46 accidents per million train-kilometres (5·53 per million train-miles) which is very satisfactory if it covers accidents of all kinds. In Great Britain in 1936 there were 6,067 accidents of all kinds, or 13·57 per million train miles, 447 million being run, but no useful purpose is served in comparing any figures on the subject unless it is known precisely what is covered by the expression " accident " in Germany.

* * * *

An Important Rail Welding Development

The development of end-to-end welding of rails has been rapid, and an important stage is marked by the placing in operation of the new portable flash butt welding equipment, described on page 271 of this issue, by the London Passenger Transport Board. An early flash butt rail welding machine was described in THE RAILWAY GAZETTE of April 28, 1933. This was, we believe, the first of its type, and the process has been steadily advancing on the Continent of Europe, and more lately in America and Australia. Provided the difficulty is overcome of assuring so stable a track as to avoid the risk of buckling when rail expansion is prohibited, the advantages of welding and so minimising rail joints are highly attractive. On tube railways, particularly those of the London Passenger Transport Board, where the track is set in concrete, the risk of buckling is practically non-existent and the only limit to the length of the rails is the practicability of handling them. An important feature of the A-1 plant described is the extraordinarily good welded joint that it produces, tests of which have stood a falling tup equal to that specified for unwelded rails. Tests have also shown that rails of 0·7 carbon content or 0·6 chrome content, and rails which have been sorbitically treated by the Sandberg process, can be welded satisfactorily with the normalising treatment which accompanies this plant.

* * * *

Locomotive Feed-Water Problem in America

It was stated in a recent issue of our American contemporary, the *Railway Age*, that between 1910 and 1930 all but a few of the more than 18,000 water stations supplying water to locomotives in the U.S.A. were rebuilt or replaced. Yet today, much of the improvement during that period has been made obsolete by the changing methods of handling traffic. Longer locomotive runs, large engine tanks, and faster schedules have allowed greater distances between water stations; and at the same time are making heavier demands at those points at which water is taken. New pumping and power units, service storage of greater capacity, and means for faster delivery of the water to the locomotives, are therefore becoming more and more necessary. In not a few instances, a complete revision of the water-softening facilities is also pressing for attention, in order to ensure that the quality of the water supplied to the engines will be more uniform. Under the new conditions of operation, water softening is no longer a problem of the individual plant, but must be co-ordinated to ensure uniform supply throughout these extended locomotive runs. It is much the same with locomotive fuel, and although in the past two or three years numerous replacements of locomotive coaling plants have been made, their number has been small compared with the total required.

* * * *

The Ubiquitous Scot

The distinction of being selected to advertise the widest possible range of commodities used to belong to the ladies, whose smiling benison was regarded as an unchallenged testimonial for any product. It seems from the February issue of *Quota News*, the journal of the L.M.S.R. Commercial Department, that this supremacy is on the way to being challenged by that company's Coronation Scot express. *Quota News* reports that illustrations of this train have been chosen to advertise a new brand of toffees, and to feature in the window display of a well-known hatter. We ourselves have recently noticed the same now familiar image adorning the covers of a new edition of a folding railway map, and drawing attention to an article on streamlining in a scientific periodical. Throughout last summer the train itself was an unfailing attraction at a suburban station we know of, where expectant crowds even lingered far into the twilight of Saturday evenings, when, of course, the Coronation Scot does not run. But far from its non-appearance on these occasions killing the enthusiasm of the watchers, uncertainty appeared to invest the prospect of seeing the train with added glamour, such as that which attaches to the possible repetition of the recent Aurora Borealis.

XUM

Railway Research

IT was a happy thought which prompted the Great Western Railway (London) Lecture and Debating Society to select "The Case for a Research Department in Railway Business" as the subject for its latest essay competition. In recent years the question of research has assumed considerable importance in almost every sphere of life, and the subject is clearly one which is of more than passing interest to the railway industry. The prize-winning essay was briefly reviewed in THE RAILWAY GAZETTE of January 28, and contained several features which are worthy of elaboration in greater detail. It must be emphasised that to admit the importance of a research department does not reflect in any way upon the present management of the railway industry. Throughout the 113 years since the opening of the Stockton & Darlington Railway, there has been a constant striving after improved efficiency, and the present high standards of speed, safety, and comfort, which have given the British railways their reputation, are due to the incessant research of countless thousands of workers directed through many generations towards the betterment of the railway industry. The position today is that the railways are carrying an increasing amount of traffic at lower rates than formerly, while costs of labour, fuel, and materials are increasing to an extent which threatens to offset the improved receipts. It is, therefore, more than ever important that the companies should explore every avenue which may lead to a still greater increase in traffics, allied with more economical working.

On the technical side, the design and construction of railway equipment provides a potentially fruitful field for railway research, capable of leading to further economy. There is, for instance, the question of the extended use of the new steel alloys for locomotive construction. Other points that suggest more comprehensive investigation are the possibility of increasing boiler pressure and utilising it to the best advantage by, for example, compounding and what we have called "internal streamlining" carried to a higher degree of perfection; the installation of automatic stokers, of roller bearings, and other modern equipment hitherto perhaps somewhat neglected. Railway rolling stock affords similar scope for applied research, particularly in connection with the construction of lighter passenger coaches of smoother running and greater comfort. Every railwayman is aware of the difficulties of dealing with passenger traffic at week-ends during the holiday months. These result in numerous divisions of trains, necessitating increased engine power, greater consumption of coal and oil, and employment of additional staff, all of which add considerably to the cost of operating "peak periods" traffic. Many of these difficulties might possibly be overcome by the use of vehicles constructed of lighter materials, which would permit of the running of longer trains and ultimately result in smoother and more efficient working of traffic, with less expense and greater satisfaction to passengers. This suggestion, of course, immediately leads to the question of improved signalling, and the scope in that direction is obvious when developments overseas, particularly along the lines of cab signalling in the U.S.A., is remembered. And mention of that country recalls an interesting change of method in the repair of freight wagons. Briefly, wagons of the same type are repaired at the same time and are moved along a repair line, similar to the assembly line at a motorcar factory. The wagons come off the line entirely renovated except for painting, which is done by means of spraying, and marking, which is effected by the use of stencils. By such modern methods, based on the principle of mass production, a saving of approximately 30 per cent. has been made in labour costs alone, whilst there have also been important collateral economies, not the least valuable of which is the saving in time. Conditions in Great Britain are not strictly comparable with those of America, but there would seem to be scope for applied research directed towards the reorganisation and speeding up of wagon repairs with a view to obtaining a greater return upon the capital which they represent.

Much has been done to improve train services during the present century, but the current timetables nevertheless reveal certain weaknesses, notably in the case of suburban, semi-fast, and cross country services. The provision of transportation at frequent and regular intervals throughout the day is one of the most important factors in the creation of suburban traffic, as witness the remarkable results achieved by the Southern electrification. The extension of such services to other and less strictly comparable areas would call for careful preliminary research into such questions as the spending capacity of the population of certain towns, the attractions offering in neighbouring cities in the way of shopping and amusement facilities, the existing flow of traffic, and the channels through which it passes, special events, and numerous other features. As to semi-fast main-line and cross-country services, they certainly seem worthy of more attention than they have generally received hitherto. Often it is found that, despite improved engine power, they are no faster than they were 20 to 50 years ago, and certainly no more punctual. Another feature of railway operation which might be considered worthy of specific research is wagon distribution. It is often a difficult matter to meet wagon requirements at times when, for a variety of reasons, the demands become exceptional. As in the case of passenger stock, it would obviously be uneconomic for the railways to base their wagon stock on "peak period" requirements, but it is necessary to ensure that the available stock is capable of being used to maximum capacity. Under existing conditions this is frequently not possible, and the investigation of the numerous problems bearing upon the question by an energetic research department might well result in substantial improvements.

There is therefore much to be said in favour of the establishment of an accredited central railway research department which would co-ordinate and direct the existing investigations and introduce new subjects for expert examination. In America this is being done by means of various bureaux set up by the Association of American Railroads, formed a few years ago. Some very striking results have been attributed to the research thus carried out on behalf of the American railways, and the following quotation from a speech made a few months ago by a responsible official of the association deals with a few of the accomplishments:—

> "The railroads, individually and collectively, through the Association of American Railroads and otherwise, have been very much alive to the importance of determining facts from which can be determined intelligent conclusions, which, after all, is a proper definition of the word 'research.' . . . A 53 per cent. increase in the speed of our freight trains since 1920; streamlined passenger trains attaining speeds of 100 m.p.h.; air-conditioning; door-to-door delivery; heavier loading of trains during a period of declining traffic; reduced fuel consumption; improved signals, and a hundred and one other improvements that could be mentioned just did not happen. . . . I believe that more real progress has been made during the past ten years in improving the art of transportation than in any previous period twice that long, and that during the next ten years even greater progress can be expected."

Similar faith in the possibilities of research in our own country has on several occasions been expressed by Sir Josiah Stamp, Chairman of the L.M.S.R., which company in 1933 gave concrete evidence of the importance attached to centralised research by re-organising the efforts of its scientific laboratories so as to bring them under one control;

and by opening new and improved research laboratories at Derby in 1935. Referring to this work, Sir Josiah Stamp has said: "The value to the company of this assistance to the departments represents in the aggregate a sum of money impossible to estimate exactly, but far greater than the expenditure on research." The same authority, emphasising the scope for research in the railway industry, stated: "Research is not confined to the technical and engineering departments. The methods of research are permeating all departments, and special development sections in the commercial and operating departments are doing important work." That these investigations are recognised to be of immediate practical assistance is clear from Sir Josiah Stamp's words on another occasion, when he said: "Within the space of five years an organisation has been built up that has now won the confidence of the other departments to an extent that is resulting in an almost embarrassing volume of requests both for research work proper and for day-to-day scientific advice and assistance."

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The Rhodesia Railway Commission

THE annual report for the year ended September 30, 1937, of the Railway Commission of Southern Rhodesia, Northern Rhodesia, and the Bechuanaland Protectorate, is the tenth report of the commission but is the first since the amalgamation of the Rhodesia and Mashonaland railways, which took effect as from October 1, 1936, although the Rhodesia Railway Company had previously worked the Mashonaland system since October 1, 1927. The financial changes involved in the amalgamation were described in THE RAILWAY GAZETTE of February 26, 1937, page 394, and the last reports of the two companies were reviewed in the issue of August 27, 1937, at page 348. The tenth annual report of the commission deals with the agreement between the companies and the Governments concerned, and the subsequent conversion of debentures. The accumulated results of working of the two systems for the year ended September 30, 1936, are also given. Operating revenue was less by £156,504 than in the year 1934-35, and the commission was informed that the restriction in the output of copper was primarily responsible for the fall in revenue. Operating expenditure was £59,599 higher, the increase of 150,889 tons hauled, together with the restoration for a full year of the temporary pay reductions, accounting for the increased cost. The accumulated figures were as follow:—

	1935–36	1934–35
	£	£
Coaching receipts	390,829	378,558
General merchandise receipts ..	1,678,389	1,779,485
Mineral receipts	1,357,528	1,441,387
Gross earnings	3,647,615	3,804,119
Expenditure	1,789,913	1,733,085
Depreciation and renewals ..	522,725	519,954
Surplus	1,334,977	1,551,080

Deducting £180,652 for income tax and £132,044 for pensions liability account and other debits, and adding £224,578 for interest and other credits, the realised income was £1,194,584, appropriated as follows: £21,516 to rates stabilisation account; £1,077,409 to loan service; and £95,659 to reserve account, being the amount of £196,023 transferred to the credit of Rhodesia Railways Limited, and £100,364 to the debit of the net revenue account of the Mashonaland company. The realised income for the year being less by the sum of £300,691 than that of 1934-35, the companies were unable to credit the reserve account with the full amount of £150,000 prescribed in the Statute.

Considerations for New Tubes

ALTHOUGH the London Passenger Transport Board is charged with the task of providing reasonably adequate passenger facilities throughout the area it serves, Parliament has also required it to organise its undertaking on a self-supporting basis and to make a reasonable return to its stockholders. While London Transport, therefore, provides many unremunerative services that are necessary to the whole scheme of co-ordinated transport, it is compelled to regard requests for the provision of new facilities from the commercial standpoint. So far as requests for new tube railways are concerned, the board has made it clear that in developed or developing areas where new railways must be built almost wholly underground, the very high average cost of construction actually reaches a figure of approximately £750,000 a mile of fully-equipped double track, and that before any such railways can be built, it is essential to be sure that they will earn, within a reasonable time, a revenue sufficient to meet the interest on their capital cost and working expenses, including depreciation. The board calculates that an average population of not less than 45,000 persons a mile of line (within, say, one mile of the line) is required to render a suburban underground railway self-supporting, although all the factors in the calculation are, of course, subject to variation in greater or less degree in actual cases. The maximum capacity of a railway being limited by technical factors, it follows that the population which it can serve is subject to a corresponding limit. For financial reasons a large population, in being or in prospect, is required before a suburban tube railway can be built. There is a margin above this minimum population which the railway has capacity to serve, but for operating reasons there is an upper limit. If the population grows beyond this limit, railway facilities can be provided for the excess population only by a duplication of the railway, and (assuming approximately equal cost) the second railway, for the same financial reasons, requires afresh the same minimum population to support it as the first.

Of course, London Transport does not necessarily and at all times require that every section of its transport system should be separately self-supporting, and from the commercial standpoint it has regard to its undertaking as a whole. An important consideration is the necessity for adapting its transport services to meet changing and expanding needs, and, in so doing, extensions are undertaken from time to time which are not in themselves remunerative, but which in relation to other works may add to the general completeness of the transport system. The works at present being undertaken in North London in conjunction with the L.N.E.R. come within this category and therefore some figures which were given by Mr. J. P. Thomas, General Manager (Railways), at the lunch which followed the visit to these new works on Tuesday of last week are particularly interesting. He said that according to a recent census by London Transport of the 9,500,000 passengers using Highgate underground station in a year, 4,600,000 transferred to or from buses and tramways travelling along the route the new railways would take, an inconvenience from which they would be relieved. From the new station West London and the City would be only a 16-minute journey. The population around Highgate station had fallen from 98,000 in 1931 to 94,000 in 1936, while the population in the Finchley area, which would be served by the extension, had increased during the same period from 59,000 to 64,100. Since 1933, 15 blocks of flats had been built around Highgate Village. The service from the new Highgate station would be provided by 35 trains an hour, 21 from the low level and 14 from the high level. The traffic, he

added, was expected to be approximately 180,000,000 passengers a year, compared with 150,000,000 at present, and more than 1,000 railways cars would be required. The passengers carried on London Transport railways now totalled 600,000,000 a year, and it was expected that when all the extensions were completed the total would be 715,000,000.

An excellent epitome of the factors which London Transport has to take into account when examining proposals for new tube lines was given in the twelfth annual report of the London and Home Counties Traffic Advisory Committee (to which we made brief reference on page 91 of our issue of January 14). In addition to the general considerations which we have outlined above, the board pointed out to the advisory committee that the construction of the suggested new tube line between Kennington and Morden, and an extension to Epsom, would involve building some twelve miles of new railway, of which seven miles would be in duplication of the existing line. The whole of the traffic which this railway would be called upon to carry would have to arise upon the five-mile section south of Morden, as the suggestion for the duplicate section between Kennington and Morden was for a non-stop tube without intermediate stations. On the calculation of average conditions, a twelve-mile railway would need a population of 540,000 before it could be regarded as financially sound. In this particular case the practical figure would be somewhat below this, as the cost of the suggested railway would be reduced by the omission of intermediate stations, while, moreover, it might be possible to build some part of the extension south of Morden on the surface instead of in tunnel. Bearing these factors in mind, London Transport felt that a population of some 300,000 to 400,000, over and above that already served by the existing Morden tube and the Southern Railway, would have to be in prospect before the proposed new underground line from Kennington to Epsom could come within the range of economic possibility. As against this, the estimated growth of population in the areas of the local authorities projecting the scheme amounts only to 120,000 in ten years, and of this expected increase only a fraction would reside within the area to be served by the suggested line.

* * * *

South Australian Government Railways

THE report of the South Australian Railways Commissioner, Mr. C. B. Anderson, for the financial year ended June 30, 1937, shows that the operating results reflected a net increase in the deficit of £8,717, as compared with the previous year. While earnings were higher by £130,952 there was a substantial corresponding increase in working expenses. Additional payments for salaries and wages restoration accounted for £55,000, and there was an increase of over £20,000 in permanent way maintenance, while the expenditure on locomotive repairs was again higher by £25,000. Even so the surplus showed a return of approximately 2 per cent. on the capital invested. The extent to which the working expenditure has been reduced is shown by comparing the deficit for the period under review, with the shortage of £1,796,228 for 1929-30, a net improvement of over £1,000,000. This reduction in the annual deficit has been accomplished only by strict economy, the Commissioner says, and the tendency towards falling revenues is unfortunately accompanied by an upward trend in expenditure. Road competition demands improved public service and greater outlay, with, paradoxically, reduced charges, while recent decisions have raised labour costs, and the prices of materials are higher every year. Meanwhile, and as has been pointed out in previous reports, the railways are burdened with over-capitalisation to an extent estimated at not less than £10,800,000, taking into account their earning capacity.

Railway passenger receipts amounted to £592,244, an increase of £43,667, and railway freight (goods, minerals, and live stock) advanced from £2,027,287 to £2,098,591. Road motor services brought in from passengers £2,304 against £1,479, from parcels and mails £4,413 against £4,141, and from freight £7,163 compared with £6,947. Tonnage of wheat (482,236) was less by 127,937 and the receipts from this source fell by £68,747, from £344,544 to £275,807. Minerals also fell by 21,635 to 683,659 tons but the receipts under this head rose from £444,012 to £540,007. On the other hand general merchandise passed the million mark in tonnage, at 1,034,564 against 980,131 and also improved in receipts by £14,534, from £1,005,654 to £1,020,188. Wool traffic varied little with a small decrease of 418 tons and £150. Bookstalls, refreshment rooms, and other subsidiary services showed an increase from £80,187 to £92,413, of £12,226. General results are compared in the following summary:—

	1936–37	1935–36
Miles open	2,529¼	2,529¼
Train-miles	5,606,353	5,462,146
Rail passenger journeys	17,776,629	17,430,674
Paying railborne freight, tons	2,382,779	2,464,711
Average haul, miles	130·02	126·07
Operating ratio, per cent.	81·0	79·8
	£	£
Capital cost of open lines	28,080,664	27,933,205
Gross earnings	3,021,662	2,890,710
Expenses, including pensions	2,447,549	2,305,709
Surplus	574,113	585,001
Interest, sinking fund, and exchange	1,300,956	1,307,127
Total deficit	726,843	718,126

The extension of the Salisbury-Redhill Railway to Port Pirie, a distance of 29 miles 19 ch. was nearing completion. This new line is a 90-lb., heavily ballasted track suitable for express traffic. As described in THE RAILWAY GAZETTE of September 10, page 439, a mixed gauge terminal has been constructed at Port Pirie, with passenger transfer station (5 ft. 3 in., 4 ft. 8½ in., and 3 ft. 6 in. gauges) stock and freight transfer yards and locomotive shed for 5 ft. 3 in. engines. The line from Red Hill to Port Pirie, opened on July 23 last, was constructed by the State of South Australia under agreement between the Commonwealth and State Governments, the Commonwealth constructing a connecting line of 4 ft. 8½ in. gauge from Port Augusta. The route Adelaide, Salisbury, Port Pirie, Port Augusta, will form a part of the main East—West Express route.

On December 28, 1936, South Australia celebrated its centenary and as a result a considerable increase was experienced in passenger traffic. The operation was continued of the Centenary train mentioned in the last report. Improvements continued to be made in passenger rolling stock. During the year a train set of main-line steel cars was placed in service. These cars were designed and constructed in the railway workshops and are of the side corridor type, 71 ft. long, with the superstructure and exterior panelling of steel built integrally with the underframe. The whole structure was designed for welding which has resulted in the provision of steel cars of adequate strength with a tare weight lower than that of the older types of wooden cars of similar dimensions. The work of equipping railcars with diesel engines has proceeded throughout the year, as a result of the satistactory service obtained from this class of car. The Government contribution of £120,000 to be applied towards paying 20 per centum of the freight charges of wool, manures, livestock, grain, and flour, continued throughout the year.

LETTERS TO THE EDITOR

(The Editor is not responsible for the opinions of correspondents)

Seat Reservation in Excelsis

236, Ferme Park Road, N.8
January 25

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Travelling recently to Torquay, I found myself in a compartment with one gentleman (?), but all the four corner-seats booked. I therefore took a middle seat. But when the train had started, it appeared that nobody else was coming. My companion chattily mentioned that for a journey of any distance he usually reserved four seats. It was rather stiff, of course, paying three shillings extra! But he liked his comfort. The usual effect was virtually to secure first class comfort and privacy for the cost of one third class fare plus three shillings. The reservation office? Oh, they never asked to see tickets. Or show them one ticket, and they would take your word for it that other tickets would be purchased.

It was extraordinarily interesting, not only for tired people racing the train-corridors looking for seats, but also, one imagines, to the railway company. I sincerely hope that THE RAILWAY GAZETTE may be able to draw the attention of the companies to this singularly mean abuse of a travelling privilege.

Yours faithfully,
JOHN GIBBONS

[The idea is, we should imagine, so much against the ingrained British sense of fair play that Mr. Gibbons's experience may probably be assumed to be the exception proving the rule. If this reservation practice became general, the railway companies would naturally demand production of tickets before making reservations.—ED. *R.G.*]

"Gutta Percha" Children's Special Flying Ranee Excursion

Bombay, Baroda & Central India Railway,
General Traffic Manager's Office,
Church Gate, Bombay
January 4

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—I am very pleased to note that you found the details of the children's special and match box label of sufficient interest for publication. The only "hitch" in the children's special was the disappointment caused to children who were not permitted to retain their tickets! For some reason the tickets were in great demand, probably as souvenirs. I have pleasure in enclosing a sample ticket which was not to hand previously. I also send you a photograph of a decorated lorry, part of our efforts to secure traffic this Christmas. It might not be out of place to mention that though "Father Christmas" is not generally understood in up-country cities, this does not hold good in Bombay, and the lorry appears to have occasioned a great deal of interest.

Yours faithfully,
G. DE P. LEEPER,
Publicity and Advertising Superintendent

Sanitation

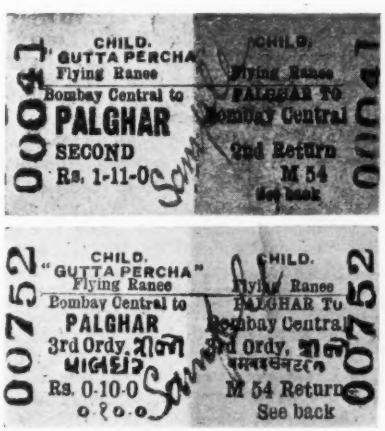
91, Oakley Street,
Chelsea, S.W.3
February 2

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—Complaints have recently been recorded against the sanitary arrangements of trains on one of the four group railways, and it has been further announced that the lavatory compartments of new coaches on that railway are to be a substantial improvement on the old ones.

There is need for improvement, not only on the line in question but on most British trains. Quite apart from the limited accommodation offered—it is sometimes completely lacking on semi-fast trains travelling over considerable distances—the equipment itself is often anything but all that could be desired. In this respect, there is no doubt that the modern standard main-line rolling stock of the L.M.S.R. is an object lesson to other companies, yet even that is not perfect. The L.M.S.R. favours the wash-down type of water-closet, with the hopper and trap in one piece, as in domestic practice, and so long as the supply of water does not fail, this arrangement answers admirably. But the supply does sometimes fail, and when this happens, the apparatus, from being among the best, becomes the very worst type for its purpose. Where the sanitary equipment of trains is concerned, water closets should be above all of a type that will discharge the contents properly even in the event of a complete lack of water, while being designed to operate with a good flush under normal conditions. This was about the one advantage of the old type of simple hopper closet, with an uninterrupted discharge straight through the floor of the vehicle. Its disadvantage, of course, was that of back-draught.

There is, however, absolutely no need for a trap, as in the modern L.M.S.R. equipment. What is needed is a well built, untrapped valve closet, of the kind that is much in favour among Continental users, and which may be seen



To be issued on Saturday, the 2nd October 1937 by the "GuttaPercha Flying Ranee" and available for return journey on the following Monday by "Flying Ranee."

Left : Tickets for the children's excursion by the Flying Ranee, B.B.& C.I.R., also showing special design printed on back ; and, right : decorated lorry used for B.B. & C.I. Christmas publicity (see letter on this page)

XUM

in an excellent form on the International cars brought over by the Dover-Dunkerque train ferries. Even if the water supply fails entirely, the valve between hopper and hopper-tube works efficiently, and prevents the apparatus from becoming badly fouled pending the refilling of the overhead tank. On many British trains, it is true, notably on the L.N.E.R. and Southern lines, a form of valve closet is in use today, but it appears to be cheaply made, for the valve is seldom if ever water-tight, thus leaving what practically amounts to a dry hopper except at the moment of flushing.

As long ago as the late eighteenth century, Alexander Cummings and Joseph Bramah caused Great Britain to lead the world in house sanitation. It is a pity that today, where transport needs are concerned, we should begin to acquire a reputation for slipshod methods in this most important matter.

Yours faithfully,
C. HAMILTON ELLIS

Punctuality

London, January 31

To the Editor of The Railway Gazette

Sir,—On January 15 last year you published some particulars relating to the punctuality of trains by which the writer had been a passenger during 1936, and I now send you a similar statement for 1937. This relates, as before, to journeys of a 30-mile minimum, and covers nearly 60,000 miles, but, owing to the widespread fog and unusually bad working conditions during December last, extends to November 30 only. The arrivals at London termini averaged 7·2 minutes late, with a " punctual or not over one minute late " percentage of 35; for the provinces (at termini or " through " stations at important towns) the average late arrival was 4·5 min., but with a " punctual or not over one minute late " percentage of only 22.

As these average late arrivals compare with 5·9 and 3·7 min. for 1936, it may be of interest to give, separately, the figure for 1937 journeys by high-speed trains (the Great Western Bristolians and Cheltenham Flyer; the L.M.S.R. Coronation Scots; and the L.N.E.R. Silver Jubilees, Coronations, and West Riding Limiteds). On these 11 trains, 44 journeys yielded an average late arrival of exactly 3 min., but the " punctual or not over one minute late " percentage was 79, and by the omission of two journeys, when engine failures caused 16 and 59 min. late arrivals, the average lateness of 42 trips would have been 1·4 min. It may still be urged, in some quarters, that this result is obtainable only by grave interference with other services, but experience should by now have proved that, with efficient regulation and punctuality throughout their course, the " havoc " caused by high-speed trains—in timetables where uniformity of speed is quite impossible—has been greatly overrated.

One other point should be mentioned. The 1937 arrivals include journeys made on summer Saturdays, as the easier schedules which now operate on these days have at least lessened the difficulties of Saturday working. But it is noticeable that the best Saturday record is that of the L.N.E.R. long-distance trains—such as the 7-hr. King's Cross and Edinburgh service—where extra time is not generally allowed. Can it be that the wholesale easing-out (over and above what is legitimate to cover extra work at stations and to enable loads to be increased) in some timetables defeats its own object by creating a " new " train service, which the staff cannot possibly become familiar with on ten or twelve days' experience, and embarrassing terminal stations by early running and inordinate recovery of time?

Yours faithfully,
VIATOR

Local Services on Main Lines

21 Edenfield Gardens, Worcester Park, Surrey
January 25

To the Editor of The Railway Gazette

Sir,—It appears that your correspondent who signs himself " Viator " has missed the point of Mr. Watkin's letter published in your issue of December 31 last. Mr. Watkin complains of the long gap between the 1.45 p.m. and present 5.32 p.m. slow trains from Bedford to Luton, which most decidedly bears out his statement that local services are bound to suffer where acceleration of express trains takes place over any considerable distance when all passenger trains—fast and slow—have to use one pair of metals.

In the case in point—the old 4.48 p.m. from Bedford—" Viator " is wrong in stating that it required 35 min. for the journey from Bedford to Luton as it was actually allowed 39 min., and the present *average* time of all stopping trains over this section is 37·6 not 35 min. as quoted; the 5.32 p.m. actually takes 41 min. If " Viator " studied the timetable he would see that there is sufficient margin between the 4.5 p.m. and 4.36 p.m. departures from Bedford to allow for the running of a local train from Bedford to Luton calling at all stations, but if the company *had* timed the 4.48 p.m. say 37 minutes earlier instead of 44 later no doubt an equal number of complaints would have been received; although it would have helped to bridge the present hiatus.

I am confident that I am the first to give praise to the Midland Division for the remarkably good " speed-up " instituted on September 27 last; but in fairness one is bound to admit that some of the local services have suffered thereby, for example, the last train from London with connection for Oakley, Finedon, and Burton Latimer now leaves St. Pancras as early as 5.40 p.m. instead of 6.30 p.m. (as from December 1 the 6.35 p.m. has called at Sharnbrook instead of Burton Latimer). Credit is undeniably due to the division for what has been already attempted, and one hopes to see improvements in other directions before long, but I fear that one is bound to admit that certain local services have suffered thereby.

Yours faithfully,
STEWART HARAM

[Reference to The Railway Gazette of four or five months ago would, we think, show that our correspondent is not quite the first to give praise to the L.M.S.R. for its enterprise.—Ed., *R.G.*]

29, Mill Road, Cambridge
January 25

To the Editor of The Railway Gazette

Sir,—I was particularly interested in the letter from " Welwyn " in your issue of January 21. Even if the Hertford loop is unsuitable for much high speed work, the institution of a through service from King's Cross, via Hertford North, to Hitchin, or Cambridge, would make possible a considerable reduction in the present Hertford—London times, thereby removing a pet grievance of the county town. At the same time the main line between Wood Green and Langley would be relieved.

Yours faithfully,
J. F. HEMMINGS

" Over the Points."—The January issue of *Over the Points*, the Southern Railway quarterly review for season ticket holders, is the first to be published under the editorship of Mr. Michael Gifford. In stating his qualifications for carrying on the work so ably begun by the late Mr. E. P. Leigh-Bennett, whose death on July 2 last year was recorded in our issue of July 9, Mr. Gifford at once establishes a friendly understanding with his many readers by describing himself as " a moderately satisfied user of the Southern Railway with no special knowledge of railway matters . . . still capable of righteous irritation and guilty of just the same ill-formed inferences." This well expresses the attitude of the average daily traveller, who is neither an incurable grouser nor a miracle of unconstructive resignation, and so Mr. Gifford's task will be made easier and more pleasant by the knowledge that most of his audience is in sympathy with him. He begins his work well by amplifying the " concise and apologetic " posters of the Southern Railway regarding alterations of train service necessitated by the works in Gipsy Hill tunnel, and at Hildenborough, explaining the work of the engineers with much readable detail. In the same issue, Mr. S. P. B. Mais writes persuasively on the pleasures of group rambles as organised by the British Youth Movement, and facilitated by the special corridor trains of the Southern Railway from London to suitable environments

PUBLICATIONS RECEIVED

Locomotive Feed Water. London: Alfloc Limited, Bush House, Aldwych, W.C.2. 10 in. × 8 in. 101 pp. Illustrated. Price 3s. 6d.—The publisher of this book, an associate of Imperial Chemical Industries Limited, is a firm with a wide experience of chemical feed-water treatment methods, and offers to railway companies the facilities of advice, information, and research in installing a uniform method of water-softening and conditioning throughout their systems. Through its associates, Alfloc Limited supplies the necessary chemicals for the different conditions of impurity met with, the effects and neutralisation of which are the principal subject of this book. The two main types of treatment are the external (*i.e.*, before the water is delivered to the locomotive boiler), and wayside treatment (or treatment in the locomotive itself). The most successful external treatment is the lime-soda process, the choice of chemicals for which depends upon the quality of the water and is a subject in which Alfloc Limited specialises. By the addition of Alfloc sodium aluminate, further advantages are claimed for the process. Where relatively small volumes of water in isolated positions have to be treated, however, the wayside method commends itself by dispensing with a large external softening plant. Instead, suitable reagents are added to the water in the lineside storage tanks, which cause impurities to be harmlessly precipitated in the locomotive boiler, whence they are removed in the boiler blowdown. The Alfloc systems of wayside treatment provide either for situations where the tanks are large enough for partial precipitation to take place therein; or where, on account of the water supply being taken direct from the mains or from small lineside tanks of the "parachute" type, precipitation must take place entirely in the locomotive boiler by the deferred reaction process. Interest is added to the book by numerous full-page illustrations, some of them giving a remarkable impression of the effect of water impurities on boilers and tubes.

Deutscher Reichsbahn-Kalender—1938 (German State Railway Calendar—1938). Edited by the Press Service of the German Ministry of Transport. Leipzig: Konkordia Verlag Rheinhold Rudolph. 160 sheets, with coloured pictorial cover, 10¼ in. × 6¼ in., fully illustrated. Price RM. 3.20. —With the coming of the New Year, the German State Railway has issued its hardy perennial, which this year carries the motto "*Reichsbahn und Handwerk*." *Handwerk* is one of those famous German portmanteau words, meaning, variously, labour, calling, handiwork, arts-and-crafts, guild, trade, and a good many other things. In consequence the beautiful half-tone reproductions which subsequently appear above this caption have a wide and rich variety. They begin with the coloured cover itself, which shows three sturdy Nordic-looking fitters taking down the motion of a "Pacific" type locomotive. Thereafter follow one of a waiting room decorated in old German style, a really wonderful example of decorative inlay from a railcar, pictures of carved figures on railway buildings, the construction of the new Rhine bridge at Speyer, a rotary snowplough clearing a drift, and numerous other variations on the almost inexhaustible *Handwerk* theme. Among the scenic views, which take us *mit der Reichsbahn durch deutsche Lande*, the snow-scenes are particularly beautiful pieces of photography. An interesting subject is the Stuttgart-Munich-Berchtesgaden electric express railcar, which is shown ascending the Geislingen incline over the Swabian Jura. The Rhine valley and its towns offer numberless chances to the photographer, such as the view of the Hohenzollern bridge taken from between the pinacles of Cologne Cathedral. Character photography also reaches a high standard, whether of the various types of railwayman, passengers, and political personages, or of the four charming Black Forest young ladies who, on June 19, lean over a level crossing pole waiting for the train to pass.

The rationalisation of railway and road transport receives its due. We see the typical Reichsautobahn with its express bus, and the interior of the new works at Sebaldsbrück, near Bremen, where the State Railway Company builds its own motor lorries. A most interesting picture shows the double-decked swing bridge at Königsberg, which carries four railway tracks on the top deck and a broad motor road below. We could comment for several pages on the pictorial contents of this invariably interesting publication, but the best thing we can do is to recommend every reader to buy one and hang it on the wall. (See illustrations on pages 272-273.)

Planers and Slotters.—The Butler Machine Tool Co. Ltd., Halifax, has issued a new series of illustrated sectional catalogues describing new developments in the firm's range of spur-drive planers, and precision and high-production slotters. The planers have electric motor drive through a three-speed gearbox and ball-bearing countershaft. They include a special rail-planing machine of extremely rigid design and capable of removing the heaviest cuts. The high-production slotters described in another catalogue are massively designed for heavy work combined with extreme accuracy. Tables, which may be circular or square, are of large size. Any machine can be fitted with the Butler patent electric feed unit, which assists the operator by giving him push-button control without leaving his working position. A range of precision slotters is described in the third catalogue. These machines are intended for use where accuracy as opposed to cutting power is of paramount importance, a maximum error of 0·0005 in. being guaranteed for the table traverses and the alignment of the ram.

The Elastic Rail Spike.—Particular interest attaches to the new elastic rail spike described in a handsomely produced brochure we have received from the Elastic Rail Spike Co. Ltd., of 117, Fenchurch Street, London, E.C.3, because of the trial lengths installed on the L.M.S.R. main line, as described in THE RAILWAY GAZETTE of May 14, 1937. The first test tracks with this ingenious and simple spike were laid in Germany four years ago without any other fastenings for baseplate or rail and without rail anchors. There has been neither creeping of the rail nor chafing by the baseplates, and the tracks continue in first-class condition, the spikes maintaining their holding power and pressure and functioning entirely as the inventor had expected and claimed. Early in 1936 the elastic spike was introduced in the U.S.A., and the interest it has already aroused there is evidenced by the fact that already about a dozen railways have installed test tracks during 1936 and 1937 in widely separate parts of the country. Several more trial sections have also been installed in Germany, and the Chief Engineer of the L.M.S.R. mentioned in his presidential address to the Permanent Way Institution in London recently that the elastic spikes installed on his system had so far proved quite satisfactory and that no creep had taken place in the rails held by them.

The normal elastic rail spike is manufactured from ⅝-in. by $\frac{5}{16}$-in. spring steel, bent hot and suitably hardened and tempered. The shaft of the spike is hammered out to a wedge shape at the lower end so that driving is facilitated and the wood fibres of the sleeper are protected. Owing to the shape of the holding-down shoulder of the spike, vertical movements of the rail react laterally at the shaft. There is thus no force tending to withdraw the spike from the sleeper, and this fact combined with the high holding power of the square shaft in the tight-fitting round hole enables the spike to hold its position so that the necessity for redriving is eliminated. The heavy pressure exerted by the spring spike on the foot of the rail provides a positive fastening so that in practice no movement laterally or longitudinally between rail baseplate can take place. Correct gauge is thus maintained and creep eliminated. Where small baseplates only are available a short-head elastic spike is provided, one leaf only of which is bent over to form the arc. Where the normal elastic spike with short baseplates, or the short spike head without baseplates have to be used, the shaft of the spike is rounded for the lower part of its length so that it may be driven in sufficiently far for the shoulder or arc to be turned clear of the head of the rail for driving down to its final position.

XUM

THE SCRAP HEAP

DEPARTMENTAL DITTIES*

By H. W. PAYNE, Principal Assistant to Chief Goods Manager, G.W.R.

General Manager
In our august retreats where the mighty have seats,
Nought's said without strict reservations;
But off comes the muzzle with letters that puzzle,
We stamp them " for your observations."
Your kind observations!

Engineer
Tracks, crossings and junctions are part of our functions,
And to fly-overs we've no objection;
Embankments and tunnels, large culverts and runnels,
Our lines and our curves are perfection.
All points to perfection!

Operating
With slow or fast freight we never run late,
But we've very clear cut predilections;
For the yards will be stopped if we have to adopt
And operate all screw connections.
We dislike screw connections!

Surveyor
We're adept at a deal if the leases reveal
There's a chance for some smart speculating;
We never stop searching for rod, pole and perching,
And we know how to wangle the rating.
You should hear us orating on rating!

Accountant
We're the only wet nurse of the company's purse,
And don't please suggest false pretences,
If you do, when we're slack we'll get our own back
By checking your personal expenses.
We love your expenses!

Solicitor
On questions of fact we can oft quote an Act,
But of law it partakes of a seance;
We always shall stick-to " flagrante delicto,"
And we don't travel fast with conveyance.
Damned slow with conveyance!

Signal Engineer
At " Home " or at " Distants " we need no assistance
To show us the way we are heading;
When we run short of space we look over your place
And pinch part of the platform at Reading.
We live handy at Reading!

Police
Now that crime's getting rougher we have to be tougher,
There's no room in the force for C.3 men;
Each day for our luncheons we bite up our truncheons;
The real staff of life to the " G " men.
He men our " G " men!

Stationery
Much paper and pencils, much printing and stencils,
With columns ruled up ad libitum;
Types inartistical set for statistical
Figures that ad infinitum.
Add infinitum!

Doctor
If we can't see Lord Horder to cure our disorder
Or get diagnosed with precision,
We'll take our chest cough and our little vest off
To be tapped by the next best physician.
You can guess the physician!

Press
We never grow less as each week from the press
We furbish, adorn and embellish
The articles, news and various views,
And Lamb says it's " O Kay " with relish.
Kay's hot stuff as relish!

Ourselves
A composite crowd who, for crying out loud,
Could find a convincing excuse:
Condemnation and praise follow us all our days
And we get our full share of abuse.
We thrive on abuse!

We account and we quote and we take careful note
Of the wish of the trader our master;
But we screw up our courage to charge him demurrage
For not clearing his vehicles faster.
He'll seldom clear faster!

We find transport by road a burdensome load
With its traffic obtained by abduction;
But you need not ask whether our cap bears a feather
For saving South Wales from destruction.
We're distressed at destruction!

But if we sound weak don't consider us meek,
And none shall our 'scutcheon besmirch;
Thro' steps we have taken we bring home the bacon
By way of our traffic research.
You must search by research!

Though artful devices can meet current prices
With sympathies broad and communal;
'Tis only permissive by being submissive
Appearing before the Tribunal.
That awful Tribunal!

* *Mr. Payne recited these verses at intervals between the various items in the musical programme at the annual dinner of the Great Western Railway Chief Goods Manager's Office dinner last Friday.*

This cartoon by "Glenn" in his "Dorothea" series, which was published in "The Daily Mail" of Saturday last, will strike a sympathetic note with many victims of a type of railway boor now happily on the decrease

OVERSEAS RAILWAY AFFAIRS

(*From our special correspondents*)

NEW ZEALAND

Success of New East Coast Line

This line, connecting Napier with Wairoa (82 miles), *via* the Mohaka Viaduct, was, as already recorded in THE RAILWAY GAZETTE, opened in July, 1937, for goods traffic only. Commenting on the six months' working of the new line up to December, 1937, the General Manager of Railways, Mr. G. H. Mackley, said that, in general terms, the tonnage both ways had exceeded the most optimistic expectations of both the Public Works Department and the Railway Department. He added that practically every avenue of goods traffic for which the line had been built had been accorded the utmost support of the people in the district between Gisborne and Napier.

It was not likely, he added, that the Public Works Department would hand over the line for passenger traffic until April, 1938, but when the service did begin, 60-ft. railcars of the standard type, at present under construction at the railway workshops, would be used on the line.

"The business of the New Zealand Railways Department during the present financial year has been exceptional," he added, "and it is confidently anticipated that its conclusion will see the biggest gross revenue the department has recorded in its history. There has been a general rise throughout every district in New Zealand, passenger services particularly being buoyant. All of this has contributed to the expectations of a new record being established."

Modern Construction Methods on the South Island Main Trunk Extension

On the work of completing the South Island main trunk line to connect Blenheim (the chief town of Marlborough) and Picton (its port) with the rest of the South Island by rail, modern construction machinery and methods are being used with highly satisfactory results. The Minister of Public Works, who is responsible for the work, said recently: "Every major job completed so far has been done in less than the estimated time, and at less than the estimated cost. The Hawkeswood cutting alone is a vindication of mechanisation. It is the largest cutting in New Zealand, and altogether 400,000 cu. yd. of material was shifted in 12 months." He added that it was originally intended to build a tunnel at this point, and the excavation of the great cutting by machinery had saved the country £23,000.

Continuing, he said that if the line was completed within the expected three years, it would constitute a remarkable record for railway construction. Apart from the possibility of being held up through shortage of steel, the large tunnelling jobs on the line had been expected to delay the work, but the introduction of the power-driven scraper, which automatically removed spoil as fast as it was displaced by the drillers, had speeded up the tunnelling operations tremendously. They would result in a reduction in tunnelling costs, faster work, and the elimination of the unhealthy underground work which had long been a dread to miners.

Hundalee will probably become the new railhead of the southern section of the line within six months, 12 miles from the southern terminal at Parnassus. Good progress has been made along the left bank of the Conway river, and a power excavator is boring through a ridge of rock and forming a 65-ft. cutting. This machine is able to remove in one shift the spoil displaced by two shifts of drillers and blasters. Between 6,000 and 7,000 yd. of rock are removed by the excavator in the time formerly taken by a party of the best workmen to remove 800 yd. of the same material.

ARGENTINA

Fast Run by B.A.P.R. Diesel Train

On November 10, a three-coach diesel train belonging to this railway made a non-stop run between Buenos Aires and Mendoza, a distance of 1,063 km., in 10 hr. 29 min. The train left Buenos Aires at 7.45 a.m., and arrived at Mendoza at 6.14 p.m. The average speed maintained was 101 km.p.h., but at certain stages of the trip, speeds between 110 and 155 km.p.h. were registered. In addition to the principal officials of the railway, the party included the following specially-invited guests:—

Engineer Manuel Garcia Torre (Director-General of Railways), Messrs. J. Mailer (C.M.E., Cordoba Central Railway), W. P. Deakin (C.M.E., Central Argentine Railway), P. W. Dobson (Locomotive Superintendent, B.A. Midland Railway), R. G. Parrott (Metropolitan-Vickers Limited), C. Batchelder (General Electric Company), and the following State Railway officials: Señor Carlos A. Ochoa (Chief Maintenance Engineer), Señor P. Belfiore (representing the Chief Engineer), Engineer H. Vilaseca (Locomotive Running Superintendent), Señor R. Burzaco (Chief of Diesel Traction Section), Señor J. Castro Madero (Stores Superintendent), and Señor A. Fradua (Inspector-General, National Railway Board).

The new service was put into regular operation on November 15 between the cities of Mendoza and San Juan, and it will be extended later to San Rafael and other points in the Cuyo provinces.

Engineering Meetings

The annual general meeting of the Buenos Aires branch of the Institution of Railway Signal Engineers was held in the English Club on December 3, with Mr. J. L. Partington in the chair. After discussion, it was decided to nominate Mr. Partington as a permanent representative of the branch on the "Instituto Argentino de Racionalización de Materiales," instead of appointing a new delegate every year. The following committee was elected for 1938:—

Chairman: Mr. C. Redman; Vice-Chairman: Mr. F. C. Foulsham; Hon. Secretary and Treasurer: Mr. F. E. Goss; members: Messrs. C. F. B. Whitlock, H. J. Mc Phail, and G. Chennel.

The meeting was followed by the annual dinner.

The 10th annual meeting of the Buenos Aires Association of the Institution of Civil Engineers was held on December 9, and presided over by the Chairman, Mr. M. F. Ryan, C.B.E., M.Inst.C.E., General Manager, B.A. & P.R. The following committee was elected for 1938:—

Chairman: Mr. W. R. J. Murray, Stores Superintendent, B.A.G.S. & B.A.W.R. Vice-Chairmen: Messrs. J. F. Main, M. F. Ryan, R. Kirby, and T. C. S. Haslam. Honorary Secretary: Mr. H. W. Stevens. Honorary Treasurer: Mr. T. C. S. Haslam. Members: Messrs. H. L. Stevens, G. H. Austin, F. W. Butler, J. R. S. Fox, and E. S. G. de la Motte. Students: Messrs. G. C. Burton, H. R. Pritchard, A. B. Bridger, and J. S. Hutton.

It was decided that the annual visit for 1938 would be to the hydro-electric scheme, Rio Negro, Uruguay.

The same evening, the annual general meeting of the Argentine Centre of the Institution of Electrical Engineers was held at the English Club, Buenos Aires, under the chairmanship of Mr. H. C. Siddeley. The report gave the number of members on the roll as 57, including 16 full members, 20 associate members, 10 associates, 5 graduates, and 6 students. It also stated that during the year the centre had become affiliated to the "Instituto Argentino de Racionalización de Materiales." The following committee was elected for the ensuing session:—

Messrs. C. G. Barker, K. N. Eckhard, G. W. Munday, R. G. Parrott, H. C. Siddeley, R. Wright, C. W. Foale, H. J. McPhail, and D. H. Nye.

The meeting was followed by the annual dinner, presided over by Mr. Siddeley, at which 36 members were present.

Transandine Railway Agreement Extended for One Year

A Decree, extending for the period of one year the duration of the agreement signed between the Argentine Government and the Transandine Railway Company, providing for the purchase of the line by the State, was signed by the President of the Republic on January 3. As stated in THE RAILWAY GAZETTE of August 13, 1937, the agreement provides for the transference of the whole of the company's assets to the Government at a price of £750,000 sterling, of which 10 per cent. was to have been paid in cash and the balance in 4 per cent. bonds, with an annual cumulative amortisation of 1 per cent. The terms of the agreement provided that it must be ratified by Congress, and it was accordingly submitted to that assembly on June 23, but was never

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considered by either of the Chambers. It therefore lapsed at the end of 1937, but has now been renewed until December 31, 1938, in order to afford Congress an opportunity to discuss the question during the next sessions.

CEYLON

General Improvements

The results of the introduction of the new passenger fares and goods rates on October 1, and of the new timetable shortly afterwards, have already resulted in an appreciable increase in both passenger and goods traffic as shown by the figures for the last quarter of 1937. Another important step contemplated is a further increase in the speed of trains. For long distance travel speeds up to about 45 m.p.h. are proposed. With the improvements already announced and those about to be introduced, the railway authorities are hopeful of recapturing soon much of the lost ground.

New Economy Probe

Before finally closing down unremunerative stations, attempts are being made to ascertain whether they can be made to pay in any way, and in this connection certain stations are to be closed during the slack hours of the day and night so that the staff may be reduced. To this end all stationmasters have been instructed to inform the head office the time of the day or night during which their stations could be closed without causing any real inconvenience to the people of the locality served, and of the minimum staff necessary to man the stations during working hours.

Awards for Useful Ideas

A Railway Suggestions Committee, composed of the Deputy General Manager (Operating), the Chief Engineer, the Mechanical Engineer, and the Administrative Assistant to the General Manager as Secretary, is to be set up in accordance with a recommendation made by the Hammond Transport Commission. If the suggestions from any employee are considered worthy of recognition, the committee will recommend monetary rewards varying from Rs. 5 to Rs. 100, and in special cases even larger sums may be awarded.

SOUTH AFRICA

Status of Railway Employees' Organisations

A statement of considerable importance to railway employees' organisations has been issued by the Railway Board. The board states that the interest of the staff can be effectively promoted only where there is identity of such interests; and that it is of the opinion that this principle of indentity of interests will have to be strictly applied in future. For the purposes of staff representation, the staff will fall under five groups, namely: salaried staff, artisan staff, running staff, all other employees excluding European labourers, and European labourers. For various reasons certain departures from the conditions laid down have hitherto been permitted, but it has now been decided that in the circumstances, and in order to afford the staff organisations concerned an opportunity of taking such measures as may be necessary to conform to the principle of identity of interests, the existing facilities shall be continued for six months with effect from December 1, 1937.

In the meantime the concessions under and/or the departures from these facilities, shall be continued and similar facilities extended to associations complying with the requisite conditions, but representing a mixed staff, on the understanding that such associations be allowed to make representations on behalf of sections of staff in respect of which they represent a minority, and that the administration shall nctify the association representing the majority and permit it to take part in discussions affecting such staff.

The existing facilities referred to by the board were granted by the board, which at the time resolved that approval be given to subscriptions of members of recognised organisations being recovered through the medium of the pay vouchers on the following conditions:—

That the applicant union must have been registered as a trade union in terms of the Industrial Conciliation Act;

That it must be proved to the satisfaction of the administration that the membership of the applicant union is not less than 2,500;

That subscriptions must be based on a scale which will provide sufficient funds only for reasonable office and other incidental expenses, or for such other purposes as the administration may approve;

And, finally, that there must be submitted annually to the administration a fully detailed and audited statement of the union's revenue and expenditure.

GERMANY

Awards at the Paris Exhibition to German Firms

Much satisfaction is expressed at the awards made by the jury of last year's Paris International Exhibition to leading firms in the railway and associated industries. Three *Grands Prix* were awarded to the Allgemeine Elektrizitätsgesellschaft, for the 1-Do-1, type 18, electric express locomotive covering various portions of its equipment, and a *Diplôme d'Honneur* for the welded frame. This engine achieved a speed of 168 km.p.h. (104·4 m.p.h.). A *Grand Prix* was awarded to C. Lorenz for wireless aeroplane equipment and a Gold Medal for ground apparatus. Siemens & Halske received two *Grands Prix* for machine telegraph apparatus and a Gold Medal for train temperature control. The Vereinigte Eisenbahn-Signalwerke was given two *Grands Prix*, covering safe working and land transport, for a new compact form of mechanical locking frame, an electric power frame with electric locking, automatic block apparatus, and automatic train control.

BELGIAN CONGO

Railway Extension

The Congo Light Railways Company has recently extended its line to Mungbere, thereby giving a total route length of 425 miles running eastward from Aketi, on the Itimbiri river. Aketi is connected by river services with Leopoldville. Branch lines of the Congo Light Railways amount to an additional 97 miles.

Increased Traffic

The Katanga Railway, operating in the copper-mining area just north of the Rhodesian frontier, reports that during the first nine months of 1937 the freight traffic amounted to 2,010,818 tons, this being an increase of no less than 125 per cent. over the 889,624 tons carried in the corresponding period of 1936.

SPAIN

Collectivisation in Catalonia

The Catalan Generality has published a Decree authorising the direct and total intervention, by the Council of Economy, of industrial and commercial undertakings, for reasons of urgency of economic necessity. Under this Decree a number of interventions have already been made, including several firms which have been intervened "to protect foreign interests." It is understood that His Majesty's Consulate General at Barcelona has reported fully to the Foreign Office on this Decree.

Company Law in Nationalist Spain

According to a Decree dated December 29, 1937, and published in the official *Bulletin* at Burgos on December 31, the sole legal domicile of companies of all classes is that held before July 18, 1936, provided it is within liberated territory or when it has been fixed within that territory by resolution at a meeting held in the same. Only those general meetings, board meetings, and the resolutions, &c., passed thereat which are held within liberated territory shall have effect, and such meetings, resolutions, &c., held or passed in territory under control of the Republican Government are null and void, as well as actions abroad of persons delegated by such meetings, &c. The acts, dispositions, &c. of the Republican Government, the Basque Government, or any other separatist or Marxist Government, against the agreements or decisions of boards of banks and companies constituted before July 18, 1936, and still in existence, are void, as well as contracts, &c., made or agreed to by these boards. This Decree is retroactive to July 18, 1936. A second Decree, dated December 31, and published in the *Bulletin* of January 1, orders that companies which have already been granted permission under the Decree of February 17, 1937, not to submit balance sheets for 1936, need not make new applications for 1937.

THE G.W.R. LONDON - BIRMINGHAM SERVICE

Physical difficulties of the route—Point-to-point times of a 1¾-hour 300-ton train compared with a 2-hour 400-ton train

THE Bicester route of the Great Western Railway from Paddington to Banbury, Leamington, Birmingham, and beyond was one of various "cut-offs" constructed by that company in the early years of the present century to shorten the perfectly graded but circuitous river valley routes of its original main lines, and so to enable the Great Western to compete on more even terms of distance than before with other companies serving the same territory. Prior to the opening of the Bicester route, Great Western trains from Paddington to Banbury and beyond travelled *via* Oxford, and the opening of the cut-off in 1910 shortened the distance by 18¾ miles. At the time when the Bicester route was projected, the Great Central Railway was seeking a relief route from Marylebone which would avoid the congestion and the extremely severe gradients of the Metropolitan line between Harrow and Quainton Road, and the Great Western and Great Central companies therefore joined forces in constructing the major part of the new line through the Chilterns; the section between Northolt Junction and Ashendon junction, 33¾ miles long, was G.W.R. & G.C.R. (now G.W.R. and L.N.E.R.) joint, while the Great Western constructed its own connecting spur from Old Oak Common West junction to Northolt Junction, 7 miles, and between Ashendon junction and Aynho junction, 18¼ miles; the last-mentioned is 5 miles south of Banbury.

The new Great Western route was constructed with a view to high-speed running, gradients and curves being kept as flat as possible, but as a result of the configuration of the country passed through, the Bicester route is considerably more difficult than either the original route *via* Oxford, or the L.M.S.R. route *via* Rugby. Through the town of High Wycombe, it was not possible to avoid reverse curves of 20- to 25-ch. radius, which make necessary a 35 m.p.h. speed restriction for a full mile, while a 24-ch. curve through the adjacent station of West Wycombe, with its restriction of 45 m.p.h. means that for 2½ miles continuously the speed of down trains is at 35 to 45 m.p.h. Other restrictions are to 40 m.p.h. over Old Oak Common West junction; to 40 m.p.h. (in the case of through line trains) through Leamington; to 50 m.p.h. in the facing direction over Ashendon junction, and 60 m.p.h. in the trailing direction; to 50 m.p.h. over Hatton North junction in the trailing direction, and 60 m.p.h. in the facing direction; to 55 m.p.h. for down trains between Aynho Park platform and Aynho junction; and to 60 m.p.h. in both directions through Banbury.

The loss of time by certain of these restrictions is increased by their being situated at the foot of steep inclines, where the momentum from previous high speed would be valuable, but recovery on the adverse grade must be from the restricted figure. This applies particularly at Leamington, as to the south the slack or stop is followed by the long climb to Southam Road, while to the north, after half a mile of downhill, there is the steep ascent to Hatton, largely at 1 in 103 to 1 in 105. Similarly, northbound trains, after slowing through High and West Wycombe, have to climb at 1 in 164 to Saunderton. Another troublesome slowing is at Ashendon, going north, where speed must be reduced from the ruling figure of 80 m.p.h. and more to the 50 m.p.h. required for the divergence from the L.N.E.R. line, again with a rising grade beyond up which to recover. As compared with this the L.M.S.R. route from Euston to Birmingham, though 2½ miles longer, except at its two extreme ends has one speed restriction only, to 40 m.p.h. through Rugby.

As to gradients, the aggregate difficulty of the Great Western route is, perhaps, but imperfectly appreciated. The steepest gradient is nearly ½-mile of 1 in 45 up into Snow Hill station at Birmingham; on the down journey, in addition to this, 4 miles are inclined at between 1 in 100 and 1 in 150; 14 miles at between 1 in 151 and 1 in 200; 4 miles at between 1 in 201 and 1 in 250; and 13 miles at between 1 in 251 and 1 in 330. An approximate calculation from the gradient profile shows that the total height through which a Great Western express from Paddington to Birmingham must be lifted on all the adverse gradients, long and short, amounts to no less than 1,130 ft. For the L.M.S.R. route the corresponding figure is about 790 ft. The up journeys of both companies, owing to the fact that Birmingham stands higher than London, are the easier of the two.

As to curvature, except at the points where specific service slacks are in operation the radius of curves in general on the G.W.R. Birmingham main line is not less than 75 to 80 ch.—that is, one mile, or slightly less—the only other places where fairly sharp curvature exists being through Princes Risborough, with 34-ch. and 50-ch. curves, and some 50-ch. to 60-ch. curves at Saunderton, Southam Road, Warwick, Lapworth, Olton, Acock's Green, Tyseley, Bordesley, and in Snow Hill tunnel. But the chief difficulty of the Great Western main line is in the combination of steep gradients with awkwardly-placed service slacks, which makes it considerably the more exacting, from the locomotive point of view, of the two London-Birmingham routes.

Shortly after the opening of the Bicester cut-off, a two-hour service was instituted between Paddington and Birmingham, beginning on July 1, 1910. In the down direction trains left Paddington at 9.10 and 11.5 a.m., 2.35, 4.0, and 6.5 p.m., all non-stop except the 9.10 a.m., which called at High Wycombe; Leamington was served by slip coaches off all these trains, and other slip portions were detached by various trains at Banbury, Knowle and Dorridge, and elsewhere. In the up direction the only two-hour train was the 8.55 a.m. from Birmingham; of the remaining services, those that called at Leamington were allowed 2 hr. 5 min., and those with calls at both Leamington and Banbury, 2 hr. 10 min. The engines then available were chiefly of the two-cylinder "Saint" 4-6-0 class. By the beginning of 1911, 2 hr. had been standardised as the up journey time, including the Leamington stop, with an additional 5 min. if a stop were also made at Banbury or High Wycombe. Loads were generally moderate, from 200 to 300 gross tons behind the tender being the customary figure.

After the war the 2-hr. timings were in course of time restored, and by degrees all the Leamington slips on the down journeys, except the 9.10 a.m. down, were replaced by stops, though without increase in the overall journey time. With the introduction of standardised times in the Great Western timetable in July, 1924, the Birmingham departures from Paddington were fixed at 10 min. past the hour, the five trains mentioned at the beginning of the last paragraph leaving at 9.10 and 11.10 a.m., 2.10, 4.10, and 6.10 p.m., with the addition of the 7.10 p.m.—a service of later introduction. Departures

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from Birmingham were arranged at the even hours. In October, 1933, the 11.10 a.m. and 4.10 p.m. down were slowed by 5 min. to a journey of 2 hr. 5 min. from Paddington to Birmingham, even though this involved altering the standardised series of departures by making these trains 11.5 a.m. and 4.5 p.m. from Paddington; and similarly the 12 noon up was slowed to reach Paddington at 2.5 instead of 2 p.m., leaving only the 9.10 a.m., 2.10, 6.10, and 7.10 p.m. down and the 9 a.m. up as strictly 120-min. trains on this service.

But in the meantime, although by degrees the locomotives rostered to the service had grown to the 4-6-0 "Kings," the trains, which serve Shrewsbury, Chester, Birkenhead, and a large area of North Wales, in addition to Leamington, Birmingham, and Wolverhampton, had grown to considerable dimensions. On such an express as the 6.10 p.m. from Paddington, which is popular with business men, tare loads of 400 to 475 tons are not uncommon, reduced by the two slips detached respectively at Bicester and Banbury to between 300 and 350 tons from Banbury on to Birmingham. It is this material increase of load which has complicated the working of the G.W.R. Birmingham two-hour service, notwithstanding the considerable advance in tractive power by the introduction of the "Kings."

We are indebted to Mr. C. B. Collett, Chief Mechanical Engineer, Great Western Railway, for the diagram reproduced herewith, which shows the gradients and curves of the Paddington—Birmingham route, together with the service slacks; on it curves have been plotted of the speeds necessary for the maintenance in each direction of the two-hour schedule, inclusive of a stop of 3 min. at Leamington, and superimposed on these are curves of the speeds which would be required by a non-stop booking of 105 min. for the 110·6 miles, which would entail a start-to-stop average of 63·2 m.p.h. Should there be sufficient public demand for such a service, it is calculated that it could be maintained by a locomotive of the "King" class with a tare load not exceeding 300 tons. The two-hour curves are based on the use of an engine of the same type with a load not exceeding 400 tare tons throughout between Paddington and Birmingham (that is, without slip portions), or 355 tons with a "Castle" class 4-6-0 engine. The point-to-point schedules in each direction are as follow:—

Down journey miles			400-ton train min.	300-ton train min.
0·0	Paddington	dep.	0	0
3·3	Old Oak Common West	pass.	7	6½
7·8	Greenford	,,	12½	11½
10·3	Northolt Junction	,,	15	14
26·6	High Wycombe	,,	31½	28½
34·7	Princes Risborough	,,	42	38½
44·1	Ashendon junction	,,	49½	46
62·4	Aynho junction	,,	67	62
67·4	Banbury	,,	72	66½
87·3	Leamington	arr.	91	pass.
		dep.	94	83
110·6	Birmingham (Snow Hill)	arr.	120	105

Up journey miles			400-ton train min.	300-ton train min.
0·0	Birmingham (Snow Hill)	dep.	0	0
23·3	Leamington	arr.	24½	pass
		dep.	27½	21½
43·2	Banbury	pass	49½	40
48·2	Aynho junction	,,	54½	44½
66·5	Ashendon junction	,,	71½	60
75·9	Princes Risborough	,,	80½	68½
84·0	High Wycombe	,,	90½	77½
100·3	Northolt junction	,,	106	92
102·8	Greenford	,,	108	94
107·3	Old Oak Common West	,,	112½	98½
110·6	Paddington	arr.	120	105

On the down journey, with the 400-ton load, the "Kings" are expected to ascend the 1 in 175-254 past Gerrard's Cross at a steady 55 m.p.h., and with 300 tons at 64 m.p.h. On the 1 in 164 past Saunderton speed is diagrammed to rise to 50 m.p.h. with 400 and 55 m.p.h. with 300 tons. The long 1 in 192 to 209 ascent to Ardley is shown with no lower minimum than 58 m.p.h. with 400 tons and a steady 65 m.p.h. with 300 tons. Finally it is expected that the 1 in 103-105 of Hatton bank shall be surmounted with no lower speed than 42 m.p.h. with the 400-ton and 53 m.p.h. with the 300-ton load. In the up direction it is assumed that a "King" with 400 tons attains and maintains just over 50 m.p.h. up the 1 in 187 to Southam Road, after leaving Leamington, and 60 m.p.h. with 300 tons. The long climb to Saunderton summit, south of Princes Risborough, mostly at 1 in 200 to 167, is surmounted at a minimum of 52 m.p.h. with 400 tons, and 60 m.p.h. minimum is assumed with 300 tons. No maximum speeds in excess of 80 m.p.h. are shown at any point of the route, but higher speeds are frequently attained on the present timings over suitable stretches of the line. A comparison of the speeds so diagrammed with the profile of the route, duly taking into account the effect of the service slacks, shows that either with 400 tons on the existing timings, or 300 tons on any possible future timing of 105 minutes between Paddington and Birmingham, an exacting task is laid even on locomotives of such ample dimensions and power as those of the G.W.R. "King" class. An editorial comment on this matter will be found on page 246.

BRITISH-OWNED RAILWAYS IN ARGENTINA.—A report made in June, 1937, on Economic and Commercial Conditions in the Argentine Republic, just published by the Department of Overseas Trade, price 4s., devotes considerable space to the railways of Argentina. A special section deals entirely with the British-owned lines, as distinct from the State-owned railways, and detailed statistics are given of the financial situation and the results of working for the last ten years. The statistical figures published by the Institute of Economic Studies of Transport, quoted in the report, were extensively referred to in our issue of November 12 last, and the results of working of the British-owned railways have also been fully reported in our columns from time to time.

Referring to the prospects of the privately-owned companies, the report recalls that a London director of three of the companies recently pointed out to the local press that working expenses have not diminished to any appreciable extent, but considerable sums will have to be expended on the replacement of old and worn out material. Moreover the railways are incurring heavy exchange losses (representing in recent years more than 1 per cent. on the capital invested), and, seeing that an early return to anything approaching a par rate of exchange appears to be out of the question, the companies will be denied a reasonable participation in the return to prosperity in Argentina, as long as they are not allowed some form of compensation, such as commensurate increases in their tariffs. That the privately-owned railways are still operating under most unsatisfactory, although slightly improved conditions, is reflected in the quotations of their equity stocks, which averaged 18·57 in December, 1936, as against 10·94 at the end of 1935, and 100·07 in January, 1929. The report refers to the Bill authorising the purchase of the Cordoba Central Railway for £9,500,000 (of which £8,800,000 is payable in 4 per cent. bonds), and to the purchase of the Argentine Transandine Railway. These matters were reported in our issue of August 13, 1937.

RAILWAYS AND ROAD TRANSPORT SECTION

This section appears at four-weekly intervals

New Road-Rail Furniture Service to Scotland

THE desire expressed by London furniture manufacturers for a more rapid system of delivery to the main towns of Scotland of any quantity of furniture, has been met by a new combined road-rail service inaugurated on February 1, by Carter's Transport (owned by Pickfords Limited). Furniture, whether in suites or single pieces, is collected by Carter's Transport or accepted at its depot in Marshgate Lane, Stratford, E.15, where the different consignments are sorted and packed in containers and loaded in special continuous brake-fitted trucks to go by express rail service to Scotland. The advantage of this method is that goods will not be touched from the time they are loaded in London until they are unloaded from the container at the consignee's premises. There are daily deliveries to and including all places within a ten-mile radius of Glasgow, also to Edinburgh, Leith, Portobello, and Musselburgh. Other deliveries include Stirling, Larbert, Falkirk, Aberdeen, Perth, Dundee, Kilmarnock, Ardrossan, Ayr, Prestwick, Troon, Dumfries, and Irwine. It is expected that, as the result of the new service coming into operation, there will be a considerable speeding up in delivery, particularly with regard to small consignments.

Conveyance of Liquids in Bulk

FOR a number of years past the British railways have undertaken the conveyance in bulk of liquids such as oils, motor spirit, acids, and chemicals, by means of railway tank wagons. These wagons are specially suitable for use between premises which are served by private sidings as they enable substantial economies to be effected by traders in the shape of reduced capital expenditure as compared with the cost of providing large numbers of small barrels, cans, casks, and so forth; a reduction in handling costs; and the lower conveyance rates which are generally applicable to the carriage of traffic in bulk. The use of railway tank wagons has been considerably extended in recent years, particularly in connection with the transport of milk, and milk tanks of 3,000-gal. capacity, replacing a very large number of 10- or 17-gal. churns, are now a common sight. In the case of milk traffic the tanks are generally provided by the traders, such as the United Dairies, the Co-operative Wholesale Society, and others, and the railway company is responsible for the construction of the six-wheeled undercarriages, which are fitted with automatic brakes and special springing so that the vehicles can be operated at express speeds.

Modern trading requirements, however, frequently necessitate the door-to-door conveyance of liquids in bulk between premises which are not served by private sidings, and accordingly a system of constructing units consisting of demountable tanks fitted on railway vehicles has been developed. These tanks are of two types; wheeled tanks mounted on a chassis which can be hauled to destination by road tractor from the railway terminal point; or demountable tanks, not fitted with wheels, which can be transferred from rail to road vehicle and *vice versa* by means of a crane. These demountable tanks are usually of up to 5 tons capacity, and two or more can be loaded on a specially-designed rail chassis. An example of the latter type of unit, recently evolved by Imperial Chemical Industries Limited in conjunction with the L.N.E.R. for the conveyance of chemicals from Billingham, was illustrated in our issue of January 14. When desired, liquids can be kept at low temperatures by means of insulation, or, where higher temperatures are desired, steam or electric heating coils are provided to maintain fluidity. While, generally speaking, the tanks are provided by traders and the rail undercarriages by the railways, certain firms prefer to provide the rail vehicle as well.

Regular consignments of corn syrup are now passing from London to Newport by means of complete equipment provided by the trader, and, in this connection, the railway company, in addition to hauling the tanks by road to the consignee's premises, performs the decanting service. Liquid sugar is also being conveyed by similar means from London to Paignton, and vinegar from Hull to Bristol. An increasing interest is being displayed in this method of transport, and, to meet the requirements of certain traders, the railway companies are now prepared to consider negotiating arrangements in connection with the regular dispatch of substantial quantities of liquids, under which they will construct the whole of the road/rail equipment required. As a preliminary to the companies incurring the cost of providing the rail chassis and road tanks, traders desiring to enter into such arrangements are required to enter into reasonably long-term agreements, under which they pay, in addition to the appropriate conveyance and delivery charges, an annual hire charge to cover the interest on capital, maintenance, and renewal of the equipment.

Co-ordination in the Ruhr

HERR KERN, of Essen, head of the Tramways (West) section of the Reich Association for Railed Transport, gave an address recently on the co-ordination of rail and road traffic in the Ruhr, where both railways and tramways have a dense network of lines. Owing to the preponderance of goods traffic on the railway, the development of road passenger services—for a long time, of course, entirely by trams—has always claimed attention and this tendency found further expression in the proposals made just after the war for a high-speed electric railway between Cologne and Dortmund, separate from the Reichsbahn. The more recently established so-called "accelerated" local passenger services in the Ruhr district (see our Overseas columns of June 9, 1933) have had some effect on the tram and bus traffic, and have given additional stimulus to co-ordinative measures, which have already, especially in the last couple of years, been carried through as between the various forms of road transport. Discussions with the railway are now going on, in conjunction with town planning authorities, in an endeavour to afford the maximum convenience and efficiency. Through facilities are being considered, and the arrangement of timetables at stations where the train or road

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services cannot be very frequent so as to minimise waiting times. Remodelling of station approaches, subways, and similar communications will be looked into. A considerable measure of agreement has already been arrived at between the Essen Divisional Management of the Reichsbahn and the Tramways (West) Association, the latter also acting for omnibus interests in this matter. In this way it is hoped to make considerably better use of the numerous transport facilities existing in this thickly populated industrial area.

Horse Transport in Canadian Cities

HORSES are becoming fewer and fewer on the streets of the larger Canadian cities. At the beginning of the present year, the last 18 horses—all that were left of a stable of 250 belonging to the Canadian Pacific Express Company in Montreal—were sold. The company began operations in that city in June, 1884, when one horse was taken into service. At the beginning of the present month (February) the Canadian Cartage & Storage Company passed under the control of the Canadian National Railways. For decades this cartage company handled the traffic of the Grand Trunk Railway and other railroads, and latterly that of the Canadian National. At one time no fewer than 1,000 horses were employed; but with the advent of the motor lorry these have been gradually eliminated, and now, with few exceptions, the traffic is handled by motor. *Canada's Weekly* remarks that the passing of the horse in connection with the railways will be deplored by many for sentimental reasons, and points out that the horses of the Canadian Cartage Company in particular were always fine-looking animals, thanks in great measure to the fact that the head of the company was Mr. Hugh Paton, who in his day was one of the leading judges of horseflesh in Canada.

Vienna as a Tramway Pioneer

FROM remarks which have been made to us, it appears that the brief reference (in our issue of September 24, 1937) to a horse tramway in Vienna as early as 1840 has proved of interest to modern tramwaymen, for this early venture is not well known. Probably the first street line in the world to cater for semi-local needs was the Oystermouth Railway or Tramroad at Swansea, which was opened in 1807, primarily as a mineral line, but carried passengers as early as 1811. Urban passenger tramways are generally considered to have begun, however, with the New York & Harlem Railroad, of which the first section was opened in November, 1832. Such lines were not adopted in Europe for another quarter of a century, with the exception of the short-lived *Pferde-Eisenbahn*, or horse railway, in Vienna. This was opened in 1840 to convey passengers to the spacious Colloseum pleasure resort, which was on the site of the present (disused) Nordwest-Bahnhof. According to the July, 1893, issue of *Alt-Wien*, a monthly magazine of art and literature, "this line, which was 800 Klaftern long and on which the fare was 6 kreuzer (Conventions-Münze), offered the public a completely new facility. The tram ran daily from the beginning of the Ausgarten to the Colloseum every ¼ hour from 2.0 p.m. till evening." The tram consisted of two cars joined by shafts, so that the single horse ran between the cars, pushing one and pulling the other. Both first and second class accommodation was provided.

This predecessor of street tramways was closed in 1842 and 23 years elapsed before, on October 4, 1865, the horse tramway appeared again in Vienna as a public means of conveyance with the opening of the line from the Schottentor to Hernals. At first the cars were heavy vehicles with seats on top, painted blue and upholstered in soft red cloth. The fare of 10 kreuzer was rather high, but heavy traffic led to a company being formed to extend the line. The firm of Schaeck-Jacquet & Co., which had built and worked this tramway, was therefore reorganised for the purpose as the Vienna Tramway Company. A second undertaking followed a few years later, namely, the New Vienna Tramway Company, which worked lines chiefly in the suburbs.

The first steam tramway in Vienna was opened on October 27, 1883, and was followed by others which extended beyond the city limits. Electric tramways were introduced on January 28, 1897, and the *Extra-Abendblatt* (Evening Sheet) said "the riding is comfortable, and only a slight jerk is felt as the cars are set in motion." For many years the horse buses in the Austrian capital were provided by a British company—the Vienna General Omnibus Co. Ltd.—which was incorporated on June 29, 1881, and was associated with the old London General Omnibus Co. Ltd. It was wound up at the end of 1907 in the face of competition from the muncipal electric trams. British interests again became involved in Vienna buses in 1913 when the British Electric Traction Co. Ltd. acquired a holding in the Oesterreichische Motor Omnibus G.m.b.H., a company working motorbuses in Vienna, but the outbreak of war prevented further developments.

LETTERS TO THE EDITOR

The Farnham—Haslemere Bus Service

Thornycroft House,
Smith Square, S.W.1
January 18

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—We have been very greatly interested to read on page 77 of your issue for January 14 the article concerning the pioneer L.S.W.R. road service with one of our early type of passenger vehicles, and we think it may interest many of your readers to know that Mr. C. J. Searle, who is still with this company, took delivery of this early bus from our Basingstoke works in 1904, and subsequently drove it regularly on service.

Mr. Searle has some very interesting recollections of this early pioneer bus service, and remembers that the engine was one of the first Thornycroft type B4, four-cylinder petrol models with accumulator ignition, a spare set of accumulators being coupled up to a two-way switch. The gearbox was fitted with a central change-speed lever, and actually this was the first Thornycroft vehicle to be supplied with the change speed on the left hand of the driver.

The solid tyres were fitted to wooden wheels, a peculiarity of the tyre being that there were two rows of rubber on the back wheels, consisting of segments about 1 ft. long and 3 in. wide, these segments having beading to keep them in position. Special wooden tools were provided for knocking these segments into place when they worked loose, which was quite frequently. Furthermore, to replace any one of these tyre segments it was necessary to immerse it in water to "lubricate" it, and two gallons of water were carried in a petrol tin under the back passenger seat for this purpose. The front tyre consisted of one long straight band with beading, there being no proper joint except that caused by the pressure on the two ends with each revolution of the wheel.

Mr. Searle tells us that he regularly carried a good length of rope, which was often used to assist overladen horses up Farnham hill, and by so doing he made good friends with the horse owners in the district, who found that the new bus was a friend rather than a serious competitor.

Yours faithfully,

O. SMITH,
For John I. Thornycroft & Co., Limited,
Motor Vehicle Department.

Publications Received

A History of Everyday Things in England, Vol. II (1500-1799). By Marjorie and C. H. B. Quennell. London: B. T. Batsford Limited, 15, North Audley Street, W.1. 9 in. × 6 in. × 1¼ in. 224 pp. + xvi pp. and plates. Price 8s. 6d. net.—Many of our readers will have vivid recollections of a schoolboy knowledge of history that was circumscribed in its outlook by dynastic and military changes, and some may even recall the occasion when it dawned upon them that the peoples of the world at every period had ordinary everyday lives to live and trades to practise. Probably no writers have done more to dispel narrow and false impressions than Mr. and Mrs. Quennell, the authors of this four-volume work, of which the second volume is before us. Some idea of the widespread popularity of this useful work may be gained from the fact that the first impression was published in October, 1919, and that the present issue is the fifth impression (third edition). This volume, which covers the sixteenth, seventeenth, and eighteenth centuries, is of particular interest as recording the beginnings of the modern industrial period, and therefore the introduction of public road transport.

The authors accept as the origin of the word coach the town name of Kotze, in Hungary, where, in the fifteenth century, coaches are understood to have been first built. They also adopt the reasonable suggestion advanced in Thrupp's "History of Coaches" that the Kotze coach was modelled on the German wagon. The coach was introduced into England about 1555, and at first was very simple in structure. Although a roofed vehicle, the only side protection from the weather was provided by curtains. Springing was unthought of, and some years were to pass before even the expedient of suspending the body by leather braces was adopted. Perhaps the chief interest for us at the present time in the introduction to England of the coach is that the event is evidence of the beginning of a desire, or need, to travel. There was a great development in coach-building in the seventeenth century and the Company of the Coach and Coach-Harness Makers was founded by Charles II in 1677. These events point to improved roads and an increase in travelling. In this book the seventeenth-century public transport vehicles, both for passengers and goods, are well illustrated from contemporary engravings, and light on contemporary habits and impressions of travel is thrown by a selection of quotations from such famous diaries as those of Pepys and Evelyn.

Naturally, we have referred particularly in these columns to the sections of this fascinating volume which treat of vehicles and transport, but the great value of the work is that these and other matters are outlined in true perspective as parts of the everyday life of the English people. This is a book which we can recommend without hesitation as a well-balanced and readable narrative and well worthy of preservation on the reference shelves.

Industrial Relations in Urban Transportation.—By Emerson P. Schmidt. London: Humphrey Milford, Oxford University Press, Amen House, Warwick Square, E.C.4, Minneapolis: The University of Minnesota Press. 9¼ in. × 6¼ in. × 1 in. 264 pp. Price $3.00 (14s.) net.—The title of this book, as referring to any great modern city, may be somewhat misleading. The work really relates to the history and development of street railways in the United States of America, and the conditions of labour of the men engaged in operating them. "Urban Transport" nowadays, as it is understood on this side, covers a wider sphere. Nevertheless, and although labour conditions, on which the author concentrates, are not the same here, there is much in the book of interest to all those engaged in the great industry of public transport. The first half of the book is devoted to a history of the street railway, beginning with the horse and mule railway started in New York City in 1832. The cable car first appeared in San Francisco in 1873, and then came steam, and with an overlapping period, electric traction. The first real suggestion of an electric railway, the author states, came from a Vermont blacksmith, Thomas Davenport, who operated a toy motor on a small railway. There is a reference also to the Scotsman, Robert Davidson, who in 1838 constructed a locomotive with a motor that attained a speed of four miles an hour on the Edinburgh-Glasgow Railway. From this historical retrospect the book goes through the financial history of the street railway industry, criticising overcapitalisation, which is characterised as generally due to failure to provide for depreciation and obsolescence. Private ownership is compared with public, and certainly not to the advantage of the latter. The question of charges is fully discussed, with a certain emphasis on the principle of service-at-cost, the first franchise on this basis having been granted about 1910. Then came the practical gasoline (petrol) motor, coinciding unfortunately with a period of rising costs and fixed fares, and later years witnessed the advent of the trolley and the motorbus. Now the trend is distinctly in favour of the motorbus. The latter half of the book is devoted to a history of the street railway labour movement in the U.S.A. and Canada. The author traces the beginnings of trade union influence. This in the case of U.S.A. urban transport is identified with one union, the Amalgamated Association of Street, Electric Railway, and Motor Coach Employees, founded in 1892, and which, under the long and evidently wise presidency of William D. Mahon, has been the intermediary between employers and employed in all disputes since that date. The Amalgamated Association has sustained throughout the principle that the wage of the employee cannot be held to be dependent on the earnings of the employing company, or even subordinated to the payment of loan interest. In this the union was upheld by no less an authority than Mr. Taft, the National War Labour Board, and other arbitrators. It is interesting to find the association opposed to any intervention in politics and decidedly against public ownership. It is in favour of arbitration for the settlement of disputes, and its philosophy does not include any promise of a proletarian Utopia. On the other hand it does provide what other trade unions fail in, namely, a beneficient system of aid, including old age pensions, for its members. This record of the remarkable achievement of the Amalgamated Association, together with the historical information now collected in very readable form, makes this book a valuable work of reference.

Lighting and Starting Equipment.—C.A.V.-Bosch Limited, of Acton, London, W.3, sends us an illustrated catalogue giving details of a comprehensive range of accessories designed for use in conjunction with low voltage lighting and starting equipment, principally for motor vehicles. Those who are already users of C.A.V.-Bosch equipment will be repaid by a careful inspection of the various sections detailed in the index, as, in addition to many familiar items of long standing reputation, the range embodies a number of modified designs, specially constructed to meet modern requirements. For instance, included in the switch section are type numbers 121 and 123, switches and fuses designed for unit assembly on bus-bars, which has been found a very convenient method of building up switch and fuse control for any number of circuits. Another item of interest is the low voltage exhauster fan, type B.M.A., which at present is used extensively for air purification on marine craft, but for which there are many other applications.

Passenger Vehicle Bodies.—A wide range of public service bus and coach bodies, as already in use by operators at home and abroad, is shown in a catalogue entitled "Passenger Vehicle Bodies," which we have received from the English Electric Co. Ltd., Queen's House, Kingsway, London, W.C.2. A characteristic of all types is the special attention paid in the design to the comfort and convenience of passengers in such matters as improved exit and entrance arrangements, and a higher standard of lighting and ventilation. Tramcars and trolleybuses are included among the types shown, and the bodies are both of composite and all-metal construction, according to the conditions in which the vehicles have to operate. Successful study of local circumstances is evident in the views of a double-deck bus built for routes where low bridges have to be negotiated, the exterior and interior showing how height has been saved without imparting a cramped appearance to the upper deck. For longer distance routes, the catalogue shows some coachwork offering passengers a degree of head- and luggage-room that is sure to be appreciated, while lending to the vehicles as seen by other road-users an air of dignity that advertises the services on which they ply.

XUM

Transport to the Isle of Wight

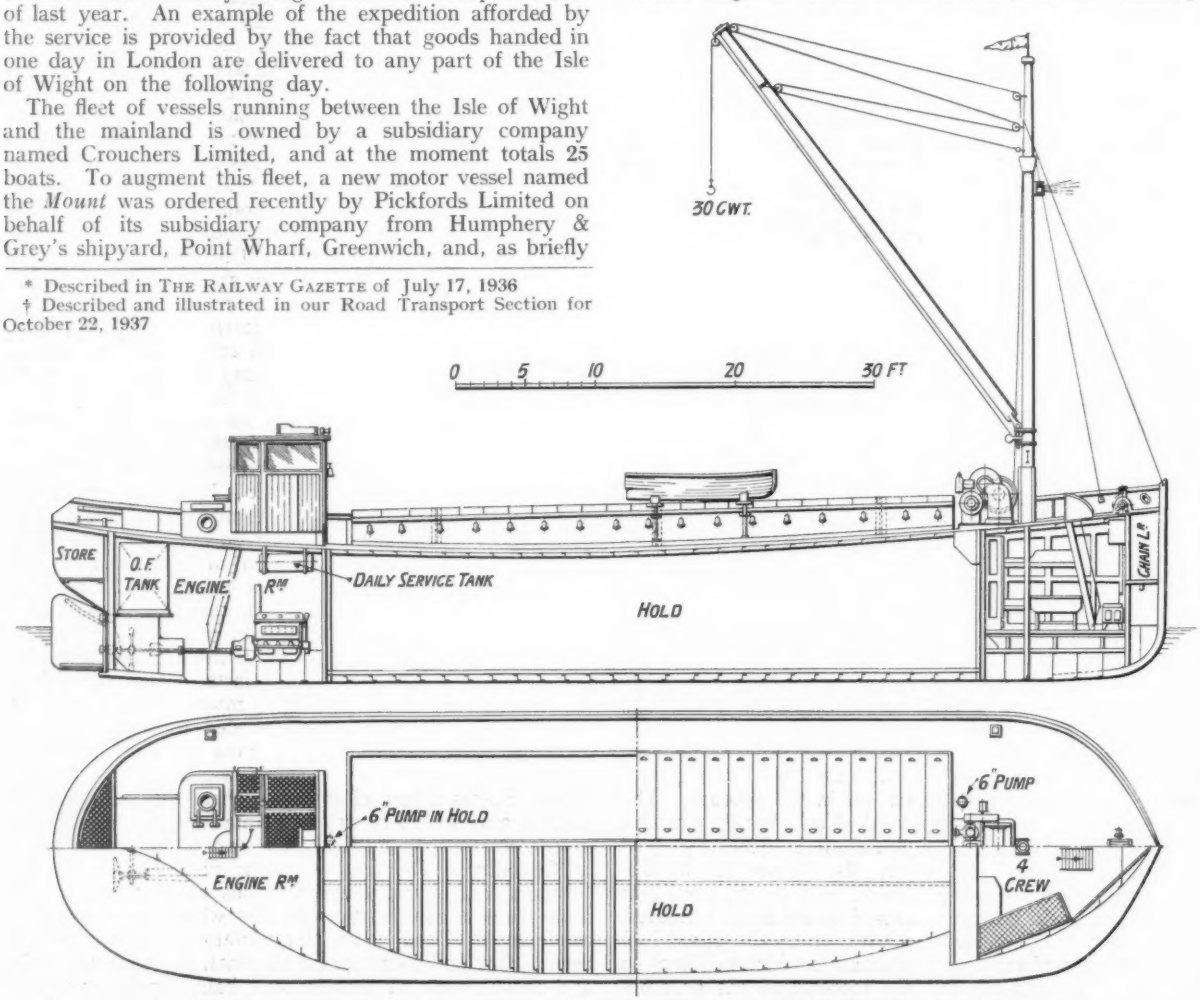
The fleet of Crouchers Limited, a subsidiary of Pickfords Limited, is being augmented by a new A.E.C. diesel-engined vessel named the "Mount"

IN our issue of October 22 last we recorded the important step in the co-ordination of road and rail services which had recently been taken in connection with traffic to and from the Isle of Wight. As we then pointed out, the separate handling of small packages is avoided under these arrangements by their delivery throughout the island by the road services of Pickfords Limited. Such goods traffic, which is dispatched by rail from all parts of Great Britain, is taken by rail to the new Fratton depot of the Southern Railway* and from there is handed over to the Portsmouth depot of Pickfords Limited, as that company is responsible for the remaining part of the journey. Goods consigned by way of road are also received at the Pickfords depots at Southampton and Portsmouth, where they are transferred to the company's cargo boats and carried to the Cowes Wharf for sorting and delivery. One feature of this co-ordination scheme was the reconstruction and enlargement of Medina Wharf and transit depot† at Cowes, and this work was formally brought into use on September 23 of last year. An example of the expedition afforded by the service is provided by the fact that goods handed in one day in London are delivered to any part of the Isle of Wight on the following day.

The fleet of vessels running between the Isle of Wight and the mainland is owned by a subsidiary company named Crouchers Limited, and at the moment totals 25 boats. To augment this fleet, a new motor vessel named the *Mount* was ordered recently by Pickfords Limited on behalf of its subsidiary company from Humphery & Grey's shipyard, Point Wharf, Greenwich, and, as briefly recorded last week, was launched on February 1 by Mrs. W. J. Elliott, wife of the General Manager of Pickfords Limited. This boat has been specially designed for the service, and one of the essential conditions was that she should be capable of loading eight standard containers as used in the transport of furniture, meat, and so forth, in conjunction with the cranes at Cowes, Newport, Southampton, and Portsmouth, for their transit to and from the island. Incidentally this is the first vessel that Pickfords Limited has had specially built for the route.

The design of the *Mount* was prepared by Mr. S. J. Selves, son of Mr. J. W. Selves, the Manager of Humphery & Grey's Point Wharf. At first it was proposed that the deadweight capacity of the vessel should be 160 tons, but in an early stage of construction it was decided to increase her carrying facilities and the capacity is now 210 tons. Although she has been designed primarily for the conveyance of furniture containers, general cargo will also be carried in one single spacious hold. The vessel has an overall length of 80 ft. and a beam of 19 ft. Although

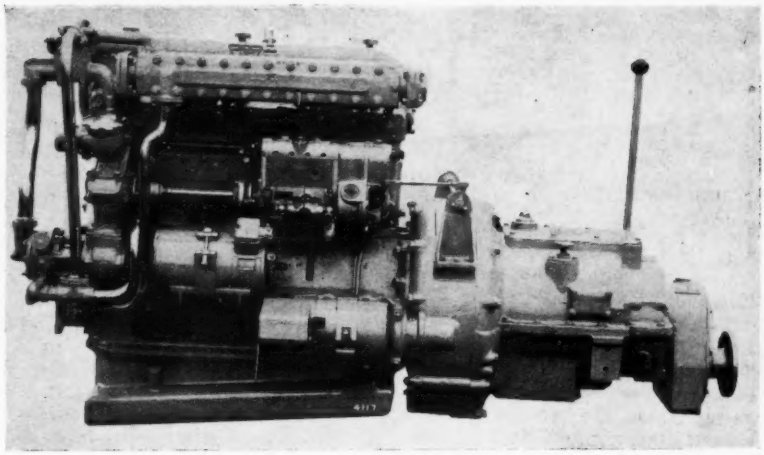
* Described in THE RAILWAY GAZETTE of July 17, 1936
† Described and illustrated in our Road Transport Section for October 22, 1937



General arrangement of the new motor vessel "Mount" for the Pickfords Isle of Wight service

in ordinary circumstances the crew (which numbers four) will not use the *Mount* as living quarters, spacious accommodation has been provided forward in the event of bad weather necessitating a stay on board. There is a comfortable cabin forward fitted with four bunks, two on each side, and a large stove for cooking arrangements.

The main propelling machinery consists of two 58-h.p. A.E.C. diesel engines for an estimated speed of between eight and nine knots. They will be controlled from a wheelhouse situated right aft. The vessel has been equipped with two winches placed forward. One, supplied by the Hamworthy Engineering Co. Ltd., Poole, Dorset, is driven by a Petters automatic diesel engine of 8 to 10 b.h.p. giving 800 r.p.m. There is also a hand winch supplied by Thos. Reid & Sons (Paisley) Ltd.



One of the four-cylinder 58 h.p. A.E.C. diesel propelling engines of the "Mount"

Northern Ireland Transport Pool

ONE of the essential features of the Road and Railway Transport Act (Northern Ireland), 1935, was that a pooling scheme should be established for the traffic receipts of the various railways operating in Northern Ireland, and those of the Northern Ireland Transport Board, which was formed on July 16, 1935, to take over virtually all public passenger and goods road motor undertakings. A road and rail co-ordination committee was established, and prepared a draft pooling scheme which was submitted to the transport board and the railway companies on November 23 last. As all the parties notified their approval, it was presented as an agreed scheme to the Transport Appeal Tribunal, and, as we have already recorded, received its approval.

The scheme, which is retrospective to January 1, 1936, will apply to (*a*) the whole of the net receipts of the board for traffic of all descriptions; and (*b*) the whole of the net receipts of each of the railway companies accruing from the conveyance of passengers and merchandise in Northern Ireland, excluding station terminal charges. These receipts, arrived at after the deduction of operation allowances, are to be divided between the parties in the following proportions:—

N.I. Road Transport Board	15·06440
Great Northern Railway	50·02075
L.M.S.R. (Northern Counties Committee)	23·54178
Belfast and Co. Down Railway	10·93940
Sligo, Leitrim and Northern Counties Railway	0·43367
Total Railway Share	*84·93560*

The percentage proportions were ascertained as at December 31, 1935, and provision is made that the proportions may be adjusted and revised from time to time. The receipts and operating expenses of the four railway companies were worked out for the years 1924 and 1932. Half of the 1924 net receipts and half of the 1932 figures were added to get the total set out in the account. The board's figures for 1932 were worked out, but they cannot be taken as final until compensation is definitely fixed in unsettled cases. Moreover, Mr. James A. Clarke, Accountant to the transport board, told the tribunal that he had prepared a report in regard to the board's figures, but referred to the difficulties with which the board had to deal in cases of acquired undertakings which had kept no accounts. The estimates fairly represented the position, and the variation would not be beyond the second decimal point in the board's percentage.

Half a Century of Pneumatic Tyres

AS briefly recorded in our issue of January 28, the première was given recently in London of a film entitled "Jubilee," which has been produced to commemorate the fiftieth anniversary of the invention of the pneumatic tyre by John Boyd Dunlop, the veterinary surgeon, who was born in the village of Dreghorn, Ayrshire, and conducted his experiments while practising in Belfast. The film shows the transition from the age of coaches running on steel rims, and carts on wooden wheels, to the present era of motorcars, motor lorries, motorcycles, tractors, bicycles, and the many other vehicles which run on pneumatic tyres. How the Dunlop pneumatic tyre came to be invented is depicted in graphic detail. Dunlop carried out his early experiments on the tricycle of his son Johnny. The actual tyre patent was taken out on July 23, 1888, and the film goes on to show the Belfast Queen's College Sports race meeting in May, 1889, when Mr. William Hume, of the Belfast Cruisers Cycling Club, rode a pneumatic-tyred bicycle to victory and demonstrated for the first time in public the advantages of the new invention over the hard wheels. A factory was set up shortly afterwards in Dublin. It soon proved inadequate, however, and a move was made to Coventry, the hub of the cycle industry. Later on a factory was established at Aston Cross, Birmingham, and, in 1916, so great was the pressure of business, that 400 acres of land were bought at Erdington, Birmingham, and the "tyre town" of Fort Dunlop came into existence.

The film goes on to show how the original invention was developed as a result of the faster speeds allowed by the Act of 1896 which permitted motorcars to appear on the highways without being preceded by a man with a red flag. In rapid sequence are shown races at Brooklands in 1907 where the many records were made on Dunlop tyres. Scenes follow of Malaya (where the Dunlop Company acquired its own rubber plantations two years later), of the cotton mills at Rochdale, and of the wheel works at Coventry. The first aeroplane flight by the Wright brothers, and flying demonstrations at Hendon in 1911 with Dunlop bicycle tyres on the wheels of aeroplanes, are featured. Then follow the multifarious Dunlop developments; Dunlopillo cushioning material, shoes, tennis balls, and rackets, squash rackets, golf balls, bowls, rainwear, rubber gloves, hot water bottles, hose for the garden, and even boots for sheep and cows.

XUM

New London Transport Private Hire Fleet

Staggered seats, radio, and improved heating are among the distinctive features of these new LTC-type coaches

FOR the special needs of its private hire department, the London Passenger Transport Board has designed a new type of 30-seat motor coach body, of which 24 have been ordered from Weymann's Motor Bodies (1925) Limited, of Addlestone, and are now in course of delivery. They are being mounted on A.E.C. Reliance chassis, and constitute the LTC type in the London Transport fleet. As may be seen from the exterior view we reproduce, the vehicles (which are in green livery) are lettered simply " London Transport " without the " Green Line " fleet name of the ordinary service coaches.

Passenger Comfort

The whole equipment bears evidence of the careful thought which has been expended on the production of a vehicle specially designed to make the private hire passenger as comfortable as possible. All the 30 seats face forward and are of the 2-passenger type, each passenger being staggered in relation to his or her partner. Headrolls and arm rests are provided, and these vehicles are the first of the board's private hire fleet which have been so fitted. Every passenger cushion is independently detachable, and the trimming consists of layers of springs with a rubber overlay. Every endeavour has been made to provide a clean interior finish upon the vehicle free from corners and dust ledges, the side frames being swept into the bottom frames by means of a coving panel covered with linoleum, the floor also being covered with this material. The luggage racks also follow the principle of clean finish; the lighting panels and lamps are let in the undersides. The fronts of the racks carry MG7 aluminium alloy handrails and are supported by Birma-bright non-corrosive castings at each pillar.

Both fixed and half-drop windows are of the pan pressing type, glazed completely in pans which have been treated with the Bonderising rust-proofing process; the fixed glasses are all of 32-oz. first selected sheet. The half-drop windows are manufactured by the Rawlings Manufacturing Co. Ltd. and are of a chain-operated type all fitted with a handle in the cant rail, embodying a spring balance behind the luggage rack lighting panel, which is put in tension whilst the window is being wound downwards, and thus stores energy to assist with the operation of the window in an upward direction. To enable passengers to see more than just what is passing the windows of these vehicles have been equipped with sliding roofs. These are in two sections by Quicktho Limited, each is 8 ft. in length and connected by a narrow bridge piece in the centre of the body between them. When open, the roof hinges outwards from the centre, both to the nearside and the offside, and lies in two portions on either side in a similar manner to the opening of a jack-knife type door. When closed, catches are provided at each end of the various sections and a rubber seal is fitted where the two sections of the roof adjoin to make the whole waterproof.

Level and Unobstructed Floor

Careful consideration has been given to the elimination of any visible mounting bolts, hookplates, washers, and so forth, upon the floor of the vehicle, and these are fastened to the sides of the bottom frame bars, in order to allow a clean floor finish. A high floor level is maintained throughout the length of the vehicle so that the necessity for either a ramped floor or an excessively high platform is avoided.

A sliding door upon the nearside of the body at the front is hung upon a Sunsaloon door runner at the top, and at the bottom edge two brackets fixed to the door slide in a Ferodo-edged channel which extends the whole length of the door travel. A pre-set double action slam lock is fitted on the inside of the door making contact with knuckle type striking plates which in turn are mounted upon rubber bushes fixed to the bulkhead and to a sheet metal cowl fixed upon the door partition.

Heating System

A novel feature is the incorporation of a Clayton Dewandre heating system which is composed of a fan and motor situated under the flooring at the rear of the vehicle, to which access is obtained by the removal of a trap in the floor of the body. The system is of the hot air type and is capable of injecting into the vehicle either warm or cold air as may be required according to the outdoor temperature. Air for the system is drawn into the vehicle by means of an intake ventilator situated at the rear of the roof behind the opening portions, and is conveyed to the fan by ducts at the rear end of the coach in the spaces formed between the inner and outer corner panels. In order to allow a free passage of air at this point a minimum area of 30 sq. in. has been allowed on either side of the vehicle for these ducts. After passing through the heater system the air is passed out into the body at several points which are reached by means of additional trunking type of ducts. Outlets are all placed beneath the seats and are just below seat level. The temperature of the coach is regulated thermostatically and the water valve is operated by a hermetically sealed phial under one of the seats and connected to the valve by means of a capillary tube. In addition to these points, a red pilot light is fitted in the bulkhead of the driver's cab so that should the heater fan be left running after the engine is switched off, a red light becomes visible both to the driver and also to the conductor of the coach.

Radio

An innovation, so far as the London Transport fleet is concerned, is the installation of radio sets, which are being provided on five of the 24 coaches. On the remaining vehicles provision has been made for such sets to be added if required, in the same position as that where the five sets are being fitted. The sets are Marconiphone type, and apart from the loud speaker incorporated in the unit, there is an additional speaker in the front nearside corner of the coach behind the door rear partition. In order to prevent any difficulties from differences of opinion amongst the passengers as to whether the radio programme is desired or not, a master switch is fitted in the driver's cab which will isolate the mechanism of the set, making it useless for passengers to try to experiment with the tuning. An aerial is fitted on the roof of the vehicle and lies at the back and sides of the rear section of the opening roof.

New London Transport Private Hire Fleet

(*See article opposite*)

Above: One of the new LTC type private hire coaches

Right: Interior view, looking forward. The neat design of luggage rack, with lights let in the undersides, is noticeable

Left: Interior view, looking rearward, showing one half of sliding roof open, and staggered seating

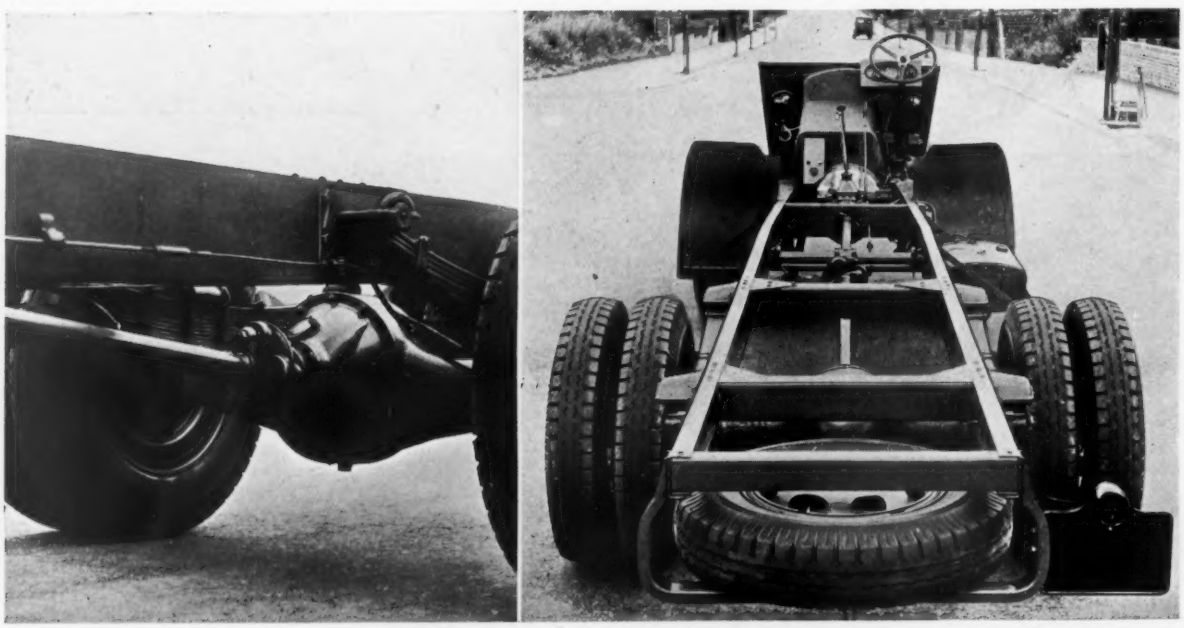
A Karrier Five-Ton Freighter

The new " CK 5 " type lorry for long-distance haulage is easily manœuvrable in railway yards and docks

IN re-entering the heavier commercial vehicle field with this five-ton freighter, Karrier Motors Limited, of Luton, has made a feature of good visibility for the driver, and ease of manœuvre in congested traffic or circumscribed spaces such as occur in railway yards and docks. The power unit and driver's cab are carried well forward of the front axle, allowing a generous unrestricted body space (17 ft. 3 in. long), with the minimum overhang at essential points, but a wheelbase of only 11 ft. 6 in. and an overall length of chassis under 21 ft. This vehicle, with its substantial 43-cwt. chassis, is able to withstand the roughest and hardest conditions of service, while its 80-h.p. engine affords a high power-to-load ratio.

Karrier five-ton freighter with flat platform body providing a loading space of 17 ft. 3 in.

The side valve engine has six cylinders of 85 mm. dia. × 120 mm. stroke, incorporated in a rigid one-piece cylinder block and crankcase with high-efficiency detachable cylinder head. The hardened exhaust valve seats are renewable, and the induction manifold, combined with a Solex self-starting carburettor, is exhaust-heated. Ignition is by magneto. Four large-area bearings, steel-backed and with lead-bronze liners, carry the balanced crankshaft. The camshaft also runs in four bearings, and is driven by an automatically-adjusted double chain. Cast-iron pistons and force-feed lubrication are other important features of the engine specification. Transmission is through a single dry-plate clutch integral with the engine, slip-free and ventilated for rapid dissipation of heat, to a four-speed gearbox in which the shafts, running in ball- and roller-bearings, are made short and stiff to prevent whip. The whole is three-point suspended in the chassis frame. The smooth and quiet operation of the complete assembly is further enhanced by a two-piece tubular propeller shaft, with Layrub universal joints providing a cushioned transmission to the sturdily built and



Left : Propeller shaft, showing one of the Layrub universal joints, and casing of fully-floating rear axle. Right : View of chassis showing forward drive and central line of transmission

adequately reinforced spiral bevel rear axle, incorporating generously proportioned fully floating shafts of fatigue-resisting steel. This axle has a straddle-mounted pinion and is suspended from the 8-in. deep, special high tensile steel frame, well braced to resist longitudinal and lateral strains, by extra long and flexible semi-elliptic silico-manganese springs, with double wrapped eyes and capable of withstanding, under full load, the most severe road shocks. Similar springs are fitted to the massive nickel-chrome reversed Elliott type front axle, which is sufficiently strong to absorb all braking stresses. Detachable disc wheels are fitted front and rear, with 34-in. × 7-in. India heavy-service tyres, single at the front and double at the rear.

Bishop cam and roller steering provides light and positive control, noticeable for absence of lost motion. Braking is also smooth and progressive, and is applied to all four wheels by the Bendix duo-servo system, which is self-energising in both directions and equally effective if the engine stalls. The brake drums are of large diameter, giving a total braking area for the shoes of some 385 sq. in. Every wheel has simple and independent hand adjustment.

The 12-volt electrical equipment is wired on the two-unit earth return system. Power is taken from 72-amp.-hr., 20-hr. rating battery, charged by a Lucas 12-volt dynamo with compensated voltage and automatic output control, so that over-charging is impossible.

Deeside Railway Buses

PREVIOUS to the passage of the four Acts of August 3, 1928, giving comprehensive road transport powers to the main-line railways, the widest road powers were those possessed by three constituent companies now forming part of the London & North Eastern Railway, namely the Great Eastern Railway (with its Act of June 24, 1904); the North Eastern Railway (with Act of August 11, 1905); and the Great North of Scotland Railway (which secured powers in 1906). These companies were thus enabled to run road vehicles for passengers and goods in connection with or in extension of their respective systems or otherwise, subject, however, in the case of the North Eastern, to severe restrictions in certain urban districts.

One of the pioneer Great North of Scotland Milnes-Daimler buses

The Deeside area provided an extensive field for services of the Great North of Scotland Railway, the first of which began on May 2, 1904, and extended for nearly 17 miles between Ballater and Braemar. Here the motorbus experienced two difficulties peculiar to the neighbourhood. One was the local preference for the old four-in-hand stage coach, and the other the rigours of the climate. The former was overcome by the comparative reliability of the motorbus and when in February, 1910, the local authorities asked the railway company to suspend the service in order to spare the soft and thinly metalled road, a strong local petition was drawn up against such a course. Snow storms proved a greater difficulty and in 1908 they were so severe that the road was blocked for some time. When eventually a bus from Ballater got through the driver received a great welcome at Braemar and someone even wrote a poem in his honour. Other services in the neighbourhood were inaugurated as follow:—

Route	Mileage	Date begun
Huntly–Aberchirder	11¾	May 1, 1905
Alford–Strathdon	19½	May 1, 1906
Aberdeen–Cluny	16½	September 1, 1906
Aberdeen–Midmar	17	November 1, 1906
Aberdeen–Newburgh	15¼	April 1, 1907
Fraserburgh–New Aberdour ..	9½	November 18, 1912

These services survived grouping and were even extended under the L.N.E.R. In 1929 the company introduced a through route between Braemar and Aberdeen *via* Ballater and thus duplicated the Ballater-Aberdeen rail facilities. Interavailable tickets were instituted. In August, 1930, the L.N.E.R. handed over these services to the Scottish General (Northern) Omnibus Co. Ltd., whence they passed to W. Alexander & Sons Ltd. It should be mentioned, however, that the Scottish General Company was already in the group, control having been purchased by the S.M.T. in March, 1930.

TROLLEYBUSES IN EAST LONDON.—On Sunday last, February 6, the London Passenger Transport Board opened important extensions of its trolleybus system in West Ham, Ilford, and Barking. North Woolwich is now linked with Canning Town by three miles of new trolleybus service, and eight miles of tramway have been converted to trolleybus operation. The service from Canning Town along the Silvertown Way to the Royal Victoria Dock and the Royal Albert and King George V. Docks, is an extension of route 669, which previously ran only between Stratford and Canning Town. Tram route 91 (Barking to Ilford and Barkingside) has become trolleybus service 691, and the new Barkingside terminus is nearly ½ mile beyond the old tram terminus, the trolleybuses proceeding along High Street, Barkingside, to Fencepiece Road. Tram route 93 (Barking to Ilford and Chadwell Heath) has become trolleybus service 693. A new service, 692, is being introduced between the Horns and Chadwell Heath, running on Saturdays only to cater for shopping traffic. The Ilford tram depot has been converted for trolleybus purposes, and five new electric substations have been built.

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Thornycroft Lorries for the Mozambique Railways

THE vehicle we illustrate is one of two Amazon class 6½-ton hinged sided lorries constituting a repeat order recently shipped by John I. Thornycroft & Co. Ltd. to the Caminhos de Ferro de Colonia de Mozambique, Portuguese East Africa. Both chassis and bodywork are of Thornycroft manufacture. The chassis is of the normal control cross-country three-axle type with a mean wheelbase of 16 ft. 6 in., and incorporating the Thornycroft 110-b.h.p. six-cylinder diesel engine from which power is transmitted through a single-plate clutch and four-speed gearbox to twin worm-driven rear axles equipped with 11·25-20 in. low-pressure tyres. For the more severe roads an auxiliary gearbox is provided, giving an additional range of gears with a reduction of 2·5.

The hinged sided body, which is of specially robust construction, has inside dimensions of 19 ft. 9 in. × 6 ft. 7½ in.; the sides and tailboard are 2 ft. 6 in. deep, and the sides are divided equally with a strong centre post between. To facilitate packing for shipment, the top half of the cab is demountable.

It will be seen that in the design of this chassis the front axle is set back somewhat further than usual in order to obtain more equal distribution of the load over all three axles. This construction also provides greater accessibility to the engine, and by reducing the wheelbase facilitates manœuvring in restricted spaces.

LONDON TRAFFIC FIFTY YEARS AGO.—A view of Charing Cross station in the pre-motor era. The theatrical advertisements on the two knifeboard buses on the right fix the date as 1888. *In the foreground is a Metropolitan Railway bus and its guard, with the once-familiar red umbrella over the driver*

Overseas Notes

Trans-Saharan Service

The Soc. Algerienne des Transports Tropicaux, which operates a trans-Saharan motorcar service between Algiers and Fort Lamy, *via* Hoggar, a distance of 2,950 miles, is contemplating the extension of the service to Brazzaville on the Congo river. The same company operates also a fortnightly service from Algiers to Kano, in Nigeria, a distance of 2,400 miles; the cars used have accommodation for six passengers, provisions, spares, and 4,400 lb. of freight and mails.

U.S.A. Milk Tank Trailer Rail Unit

An improved design of rail unit for the carriage of milk tank road trailers has recently been constructed by the Merchants Despatch Inc., of Rochester, New York. Briefly described, the unit (illustrated below) consists of an all-steel flat wagon and two milk tank trailers each having a capacity of 2,100 gal.

Transferring milk tank trailers from rail to road at an improvised dock in the U.S.A.

The wagon is equipped at each end with a square steel turntable by means of which the trailers can be swung into positions at right angles to the vehicle, enabling their easy removal or replacement by tractor at any improvised loading dock. The trailers are secured in position in transit by locking devices.

Launching the Travancore Road Service

The first Government road service in Travancore, Southern India—prelude to the general State road transport scheme outlined in our issues of August 27 and September 24—is brought nearer by the news that some of the 60 Commer PNF3 chassis ordered last August have already been assembled in India, and fitted with locally-built bodies. These are the vehicles that will open the inaugural 60-mile route between Trivandrum and Cape Cormorin. They have Perkins Lynx diesel engines, and as the same engine and chassis is being used both for passenger and goods vehicles (10 of the 60 chassis are receiving lorry bodies), a high degree of interchangeability will characterise the complete fleet. Erection of the chassis and bodies is being carried on at Travancore under the supervision of Mr. E. G. Salter, of London Transport, whose appointment as Superintendent of Road Transport in the State was recorded in our issue of August 27. Mr. Salter's services have been loaned to the Travancore Government by special arrangement, so that the road transport system may be set in motion under his expert guidance. His position with London Transport was that of Assistant to the Operating Superintendent, Operating and Traffic Department. Keen interest in the launching of the road service is being taken by the Maharajah of Travancore himself, and he has visited the plant specially installed at the Trivandrum Customs House for the assembly of chassis and construction of bodies.

Buses Replace Trains in Victoria

Rather than renew the train service on the old Outer Gauge Railway, which has been discontinued for some years, and to supplement the services of a narrow-gauge train which makes two journeys a day from Ferntree Gully to Monbulk, the Victorian Railways, Australia, will in future rely on road vehicles. For this purpose they have bought three specially-built Leyland oil-engined Tigers, with all-metal bodies constructed in Sydney. To meet the railways' demands, the wheelbase of the Tigers has been reduced to 15 ft. 6 in. instead of the 19 ft. 6 in. wheelbase usually supplied on overseas models. The result is a small-seater high-powered bus capable of negotiating steep gradients and sharp corners. One of these buses is for the Ferntree Gully service, and the other two will work close to the route of the Outer Gauge Railway, picking up passengers and making a circular trip from East Camberwell station.

Reorganisation of Transport in Ceylon

After two days' debate, the measures to organise rail and road transport suggested by the Executive Committee of Communications and Works and the Executive Committee of Local Administration were accepted by the State Council. In the case of railway reforms there was some difference of opinion on major issues, but the Local Adminstration Committee's recommendations on road transport had a favourable reception.

The proposal for road transport reorganisation adopted by the State Council provides for a central authority, a Civil Servant, who will be responsible for the regulations controlling road transport, for an advisory board; and for compulsory insurance against third-party risks. The London Passenger

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Transport Board is the model to be followed. A suggestion for a scheme of State insurance against third-party risks, made by one of the members, was accepted by the House, the Minister of Local Administration himself agreeing that it was a proposal worth considering. It was also decided that compulsory insurance should apply to owners of both public utility and private road motor vehicles.

S.A.R. & H. Road Services in Swaziland

It is now just ten years since the South African Railways & Harbours Administration inaugurated its road motor services in Swaziland. The expansion of traffic during this decade has, with one exception, been remarkable. That exception is the number of first class passengers carried, which, thanks to the increase in private motorcars, has remained practically stationary. Third class passengers have nearly doubled, the number having increased from 19,000 to 56,500. Goods traffic has increased from 6,400 to 11,200 tons. But the largest increase has been in the carriage of cream, this amounting to no less than 250 per cent., 18,000 gallons having been conveyed last year. As a creamery has now been opened at Bremersdorp, equipped with the machinery used in the working dairy at the Johannesburg Empire Exhibition, it is expected that this traffic will still further greatly increase in the near future, states the *S.A.R. & H. Magazine*.

One of the fleet of Leyland double-deckers now being introduced by the Dublin United Tramways

Unlicensed Hauliers in Eire

In addition to the competition of licensed road hauliers the Irish railways—not only as railways, but as the largest road transport freight concerns in the country—are faced with the illegal competition of non-licence holders who are liable to prosecution for carrying for reward. The Gardai (police) are active in endeavouring to prevent irregularities, but considerable trouble has been experienced in securing such evidence as will warrant prosecutions. Their difficulties are numerous and among other excuses which have proved adequate to avoid penalties is the plea that the goods were carried for a friend and without charge; sometimes also the excuse given is that the service was in return for some other act or kindness of the person involved. However, carriage of goods in return for some other act is surely carriage for which a recompense of some kind has been received and should be treated as carriage for reward. It is understood that this matter is under consideration at present.

Until lately whenever irregularities have been proved the fine has been very small and apparently the person who employed unlicensed hauliers was able to escape the penalties for which he was liable. Recently, however, fines have become more severe and on January 27 a defendant was fined £3 for being guilty of carrying on unlicensed merchandise road transport, whereas the man who entered into an agreement with the first defendant, an unlicensed carrier, was fined £5 and expenses, for doing so.

Driving a lorry without a certificate of insurance has been discovered, and defendants have been fined as much as £20 for the offence. The railway company, as road carriers, is faced with heavy trades union wages and conditions, but it appears that its competitors and owner-drivers are very differently placed, and are thus enabled to compete more effectively against the railway than if they had to pay the same rates and observe the same conditions.

Double-deckers in Dublin

Although we recall one or two isolated double-deck buses in service in what is now the capital of Eire, they have never formed a permanent part of the city's local transport. One was in service at North Wall in 1914, and about ten years ago three or four others worked for short periods. The first modern double-decker was one introduced by the G.N.R. on the Dublin-Howth route on October 17 of last year, and illustrated in our issue of December 17. Now the Dublin United Tramways Company is placing fifty in service at the rate of two a week. They are being assembled in Eire from Leyland diesel-engined chassis units. The body frame parts are similar to those used on the Leyland 56-seat Hybridge body, and have also been supplied by Leyland Motors Limited.

Moscow Local Transport

New streamlined tramcars recently put into service on the Moscow tramways were fitted experimenally with doors which open and shut automatically. The experiment has proved so successful that the system will be introduced on all the tramcars in the capital. The automatic doors are of new construction. The design has been handed over to the Kaganovich Tram Works in the Sokolniki district of Moscow.

Among the trolleybus drivers in Moscow are eight women. They are stated to have been doing their work so efficiently that the Moscow Trolleybus Trust is instituting training courses for women who desire to become trolleybus drivers. In admission to these courses, preference will be given to women conductors of the Stakhanov movement.

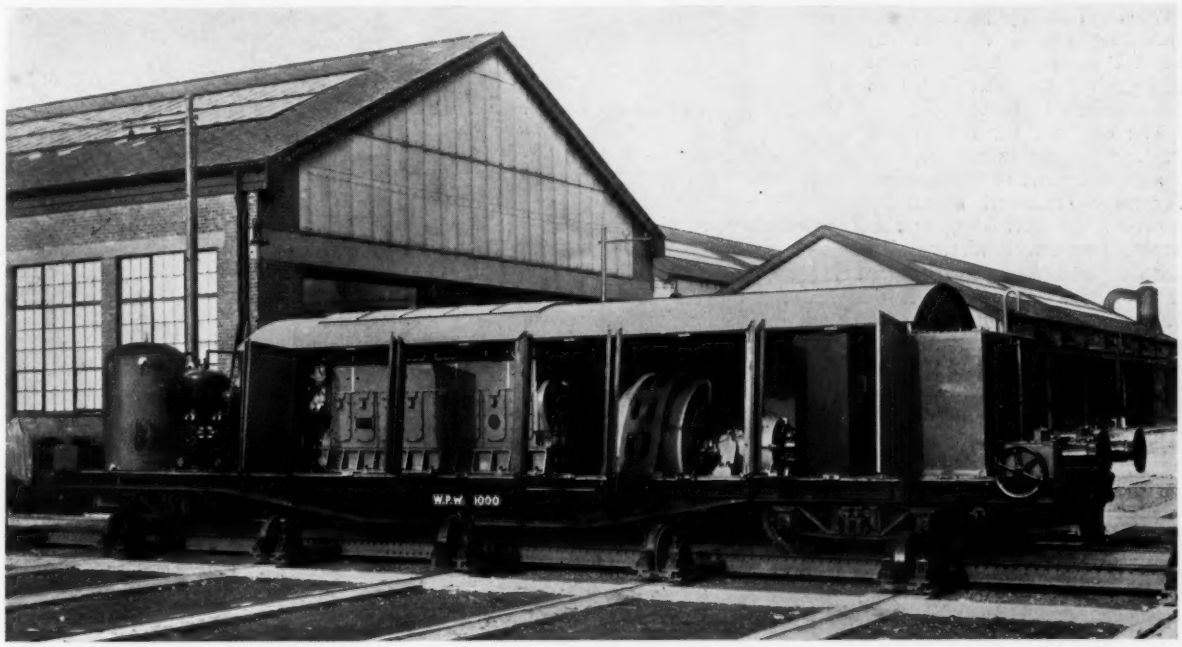
Easier Entry of Cars into Germany

Motorists are now allowed to enter Germany without the usual triptyque or *carnet de passages*. The only papers they now require, in addition to their own passports, are a G.B. plate for the car, their own driving licences and car registration book, with a German translation of both documents, and the new customs permit costing RM. 2·50 and issued by the German customs post at the frontier. The customs permit is valid for one month, and for one entry into Germany; a new permit must therefore be obtained every time the motorist crosses the frontier into Germany. The original permit for one month can, however, be renewed at any German customs office, frontier or inland. Motorists who prefer to obtain customs documents in advance to cover the whole of their tour can still make use of the familiar set of International Touring Documents issued to their members by the Automobile Association and the Royal Automobile Club.

AUTOMATIC BUTT WELDING OF RAILS, LONDON TRANSPORT

A new portable flash butt welding plant has just been acquired by the London Passenger Transport Board for the end-to-end welding of rails to form long lengths

IN connection with the programme of the London Passenger Transport Board to provide quieter travel on the tube railways, a new portable plant for the end-to-end welding of rails into long lengths has just been acquired. Two bogie wagons comprise this plant, one being a mobile power station with a 400-h.p. diesel generating set, the other containing the welding set. The welding plant, which is automatic in operation, consists of an A-1 patent automatic flash welder of 300 kVA. rating, arranged with pneumatically operated clamps and upsetting mechanism. The standard 60-ft lengths of running rail or conductor rail are lifted from the rail stacks on to a temporary conveyor, from which they are fed to the welding plant. The two lengths to be welded are placed in the jaws of the machines, aligned, and then clamped by heavy pressure exerted by the pneumatically-operated mechanism. The welding operation is then begun by push-button and no further attention is required by the operator until the weld is automatically completed, when the clamp jaws are released and the rails carried by the oonveyor to rail wagons at the opposite end of the welding vehicle. The operation of the push-button to begin the welding switches on a heavy current, and starts a slow reciprocating movement of the right-hand welding head of the machine, which is mounted on slide bars and carries one of the rails, causing the two rail ends to be brought together and separated. The resultant arcing of the heavy current, as well as the resistance of the steel, heats the rail ends. The reciprocating action is maintained for about two minutes until the condition of the metal at the extremity is so altered as to permit of automatic change-over to flash welding, which is maintained for a further period of about ten seconds. This makes the rails sufficiently plastic for welding, the temperature being then about 3,500° C. and the maximum current flowing 45,000 amps. Again, entirely automatically, the current is switched off and the rail ends are forced together with a pressure of 27 tons to consolidate the joint. The complete welding operation thus comprises pre-heating, flashing, and upsetting, the whole cycle of operations being automatically controlled and completed in less than three minutes by simply operating a push-button.



Portable 400 b.h.p. diesel-electric generating set and air-compressor set for flash-butt welding plant

The welded rails are now taken by the conveyor to the chipping plant, where the weld extrusion is removed, and then on to an electric post-heater or normaliser. The welded rails are placed in the jaws of this heater and securely clamped by pneumatically-operated mechanism. The current is switched on and when the required temperature of 850° C. is reached the heating current is automatically cut off, thereby ensuring that all joints receive the same post-heating treatment. The rails are then passed along the conveyor for final dressing and grinding of the welded joints, after which they are transferred to specially constructed rail wagons for transit, or stacked for future use. The complete operation of welding, post-heating, and dressing the joints, including handling, is done in about ten minutes so that the plant maintains an output of six welded joints an hour on 95-lb. R.B.S. running rails. The operation takes rather longer with flat-bottom conductor rails weighing up to 150 lb.

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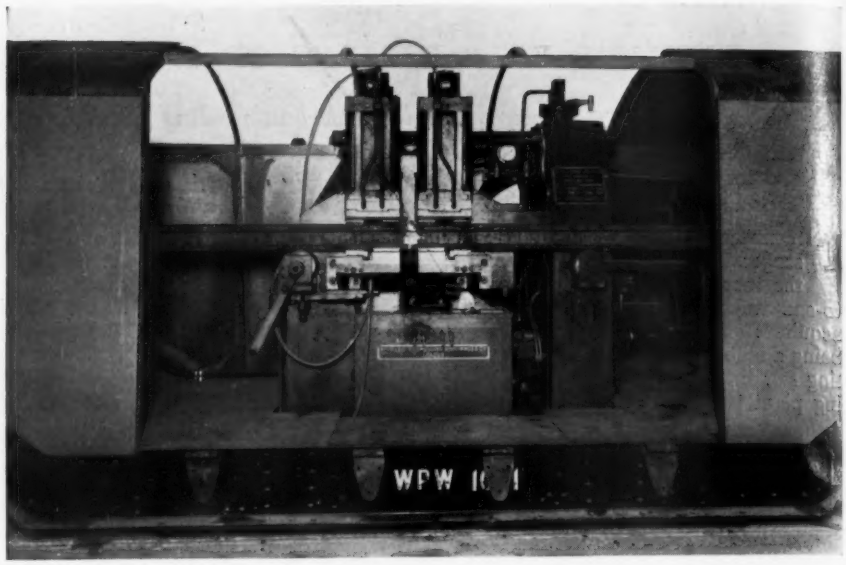
per yd. There is, of course, no limit to the length of rail which can be built up by this means, but as the rails for the purposes of the L.P.T.B. have to be welded in a depot and then taken by train to the site it has been decided to form them into maximum lengths of 300 ft. For use in the open track it is proposed to have running rails made up into lengths of 240 ft., and conductor rails in lengths of 120 ft.

Comprehensive tests have been made on rails welded by this A-1 plant, and the test figures obtained on loads far in excess of running conditions have been highly satisfactory, indicating indeed that on the normal loading conditions the strength of the joint is up to the standard of unwelded rails.

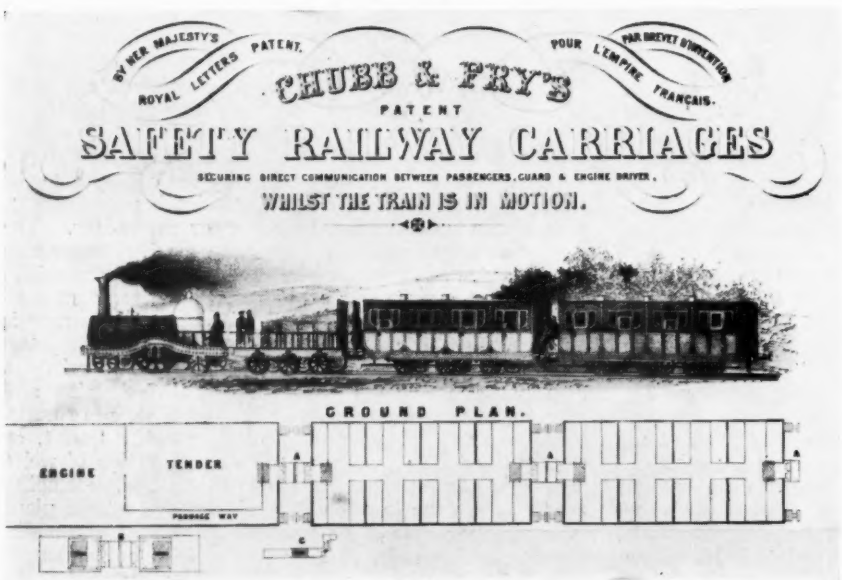


A-1 flash-butt welder mounted on wagon, showing 95-lb. running rails in position for welding

The contract for the mobile welding plant was executed to the requirements of the London Passenger Transport Board by the A-1 Electric Welding Appliances Company, of Victoria Street, London, S.W.1, and the welding machine and electric post-heater manufactured at the company's works at Inverness. The plant is designed for the automatic welding of running rails up to 12 sq. in. sectional area, and conductor rails up to 15 sq. in. area. The clamps of the 300 kVA. automatic post-heater for normalising the joint after welding are arranged for pneumatic operation and automatic regulation, and the temperature is regulated by optical pyrometer control (manufactured by Radiovisor Parent Limited). The normaliser is mounted on wheels and can be brought into the required post-heating position at will.

For the supply of alternating current to the welder and post-heater, a 400-b.h.p. diesel engine and 300-kVA. alternator, manufactured by the English Electric Co. Ltd., are included in the equipment. The two special well wagons on which the welder and the generating plant are respectively mounted, were designed and manufactured by London Transport. On the generator wagon the air compressing unit for the operation of the post-heater and the grinding and chipping auxiliary tools are situated. A self-contained motor-driven air compressor unit for the welding process is mounted on the welding wagon. Both compressor units were manufactured by Broom & Wade Limited.

The mobility of the plant is of particular interest. The two wagons have been designed to negotiate open track and tube tunnels at a maximum speed of 30 m.p.h. Welding sites are being arranged at various points on the system and the complete units can be transported as required.



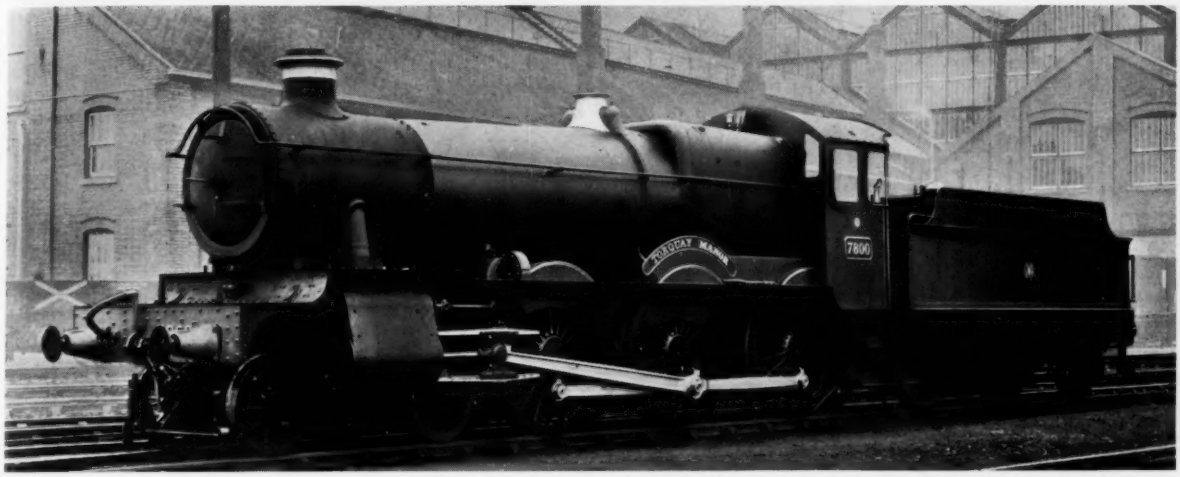
Communication Between Carriages

(*see page* 278)

Alongside we reproduce a photograph of a document recently discovered among some old G.N.R. papers, showing a scheme of 1866 *for train and footplate intercommunication. The original has been framed and hung in the luncheon room at Marylebone station, L.N.E.R.*

MIXED TRAFFIC LOCOMOTIVES FOR THE GREAT WESTERN RAILWAY

The "Manor" class now building at Swindon works



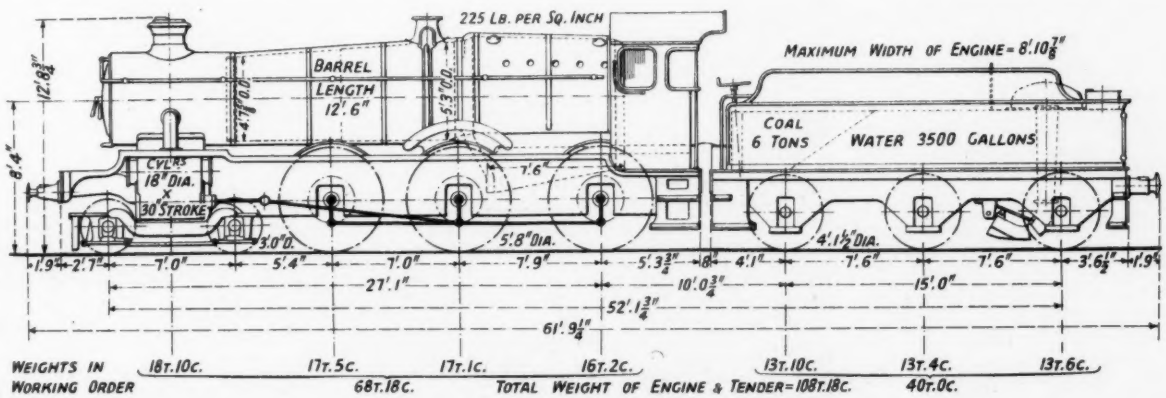
Twenty locomotives of a new class are now being constructed at the Swindon works of the Great Western Railway. They are of the 4-6-0 general-utility type, and will be used on express passenger and freight train services. The general appearance of the locomotives, which are to be known as the "Manor" class, is very similar to that of the "Grange" class of locomotives, as also are their main overall dimensions. The new engines, however, having slightly smaller boilers and cylinders, weigh in working order, 5 tons less, and will thus presumably have a wider range of activity. They will bear the following numbers and names:—

No.	Manor	No.	Manor
7800	*Torquay*	7810	*Draycott*
7801	*Anthony*	7811	*Dunley*
7802	*Bradley*	7812	*Erlestoke*
7803	*Barcote*	7813	*Freshford*
7804	*Baydon*	7814	*Fringford*
7805	*Broome*	7815	*Fritwell*
7806	*Cockington*	7816	*Frilsham*
7807	*Compton*	7817	*Garsington*
7808	*Cookham*	7818	*Granville*
7809	*Childrey*	7819	*Hinton*

The first of the class, No. 7800, *Torquay Manor*, has just been put into service to work the Banbury-Swansea portion of the through service from Newcastle to South Wales. The following are the main particulars:—

Cylinders, dia.	18 in.
Piston stroke	30 in.
Wheels, coupled, dia.	5 ft. 8 in.
,, bogie, dia.	3 ft. 0 in.
Heating surface—	
Tubes, large and small	1,285·5 sq. ft.
Firebox	140·0 ,,
Total (evaporative)	1,425·5 ,,
Superheater	190·0 ,,
Combined heating surfaces	1,615·5 ,,
Grate area	22·1 ,,
Working pressure	225 lb. per sq. in.
Weight of engine in working order	68 tons 18 cwt.
,, ,, tender ,, ,,	40 ,, 0 ,,
,, ,, engine and tender in working order	108 ,, 18 ,,
Coal capacity of tender	6 tons.
Water capacity of tender	3,500 gal.

The engine exerts a tractive effort of 27,340 lb. at 85 per cent. of the boiler pressure. It is expected that the next nine locomotives of the class will be turned out from the Swindon works within the course of the next few weeks, and the remainder of the class by the end of the summer.



Dimensioned diagram of the new "Manor" class engines

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Scenes on the German State Railway

(Reproduced from the Reichsbahn-Kalender, reviewed on page 253)

Snow plough at work in the Regensburg Division of the Reichsbahn, much of which is on the eastern frontier of Bavaria and is subject to heavy falls of snow

Booking hall at Bentheim station redecorated in modern style—affording an early introduction to current German taste for strangers entering the country by way of this frontier station

In contrast to the above illustration is this view of a waiting room decorated in traditional German style

RAILWAY NEWS SECTION

PERSONAL

L.M.S.R. Appointments

The following appointments have been approved by the directors:—

Mr. J. E. Bagguley, Assistant Works Superintendent, Derby Loco., to be Assistant to Chief Carriage & Wagon Outdoor Assistant, Euston.

Mr. J. Rankin, Assistant Works Superintendent, Horwich Loco., to be Assistant Works Superintendent, Derby Loco.

Mr. P. A. Buchan, Assistant to Works Superintendent, Horwich Loco., to be Assistant Works Superintendent, Horwich Loco.

Mr. M. G. Burrows, Mechanical Inspector, Euston, to be Assistant to Works Superintendent, Horwich Loco.

Mr. William Charles Warren, who was Senior Superintendent in the L.C.C. Fire Brigade until January, 1938, has been appointed to the position of Chief Fire Superintendent, L.M.S.R., with office at Euston.

Mr. J. L. O'Connell, Veterinary Surgeon, London (Camden), to be District Veterinary Surgeon and Horse Superintendent, London (St. Pancras).

Mr. W. H. Yemm, Joint Goods Agent, Luton (L.M.S.R. and L.N.E.R.), to be Goods Agent, Leicester.

Mr. A. Boughey, Goods Agent, Kettering, to be Joint Goods Agent, Luton (L.M.S.R. and L.N.E.R.).

Mr. W. H. B. Smith, Joint Goods Agent, Wakefield (L.M.S.R. and L.N.E.R.), to be Joint Goods Agent, Huddersfield (L.M.S.R. and L.N.E.R.).

Mr. N. R. Smith, Chief Clerk, Bradford (Valley), to be Joint Goods Agent, Wakefield (L.M.S.R. and L.N.E.R.).

Colonial Office Appointments

The Crown Agents for the Colonies have recently announced the following appointments:—

Mr. D. Boyd, to be Marine Superintendent, Tanganyika Government Railways.

Mr. A. F. Lewis, to be Storekeeper, Nigerian Railway.

Mr. N. Trewheler, to be Engineer, Capital Works, Nigerian Railway.

Mr. J. W. Duggan, to be Superintendent of Workshops, Nigerian Railway.

Mr. B. Quine, to be Assistant Mechanical Officer (Workshops), Nigerian Railway.

Monsieur F. Surleau, Assistant General Manager of the French National Railways Company, was formerly General Manager of the Alsace-Lorraine Railways, to which post he was appointed in 1936. His earliest railway experience was gained on construction work, first in France and then for six years in the French Colonies. In 1919 he was transferred to the Engineer's Department of the State Railways, where he had charge successively of the La Roche-sur-Yon, le Mans, Paris-Rive Droite, and Paris-Montparnasse districts before being promoted to be Assistant to the Chief Engineer on January 1, 1927. In July, 1927, he was appointed Assistant Chief Engineer, and in November, 1929, became Chief Engineer, Way and Works. Under M. Dautry he was in charge of numerous equipment and improvement works, including the reconstruction of many important stations, the resignalling in the Paris suburbs and between Caen and Cherbourg, and the remodelling of big marshalling yards, locomotive depots, and workshops. He was also in charge of town-planning, and was President of the Social Works Committee of the State Railways system. He helped M. Dautry in the preparation and execution of the big works programme to combat unemployment. In 1927 M. Surleau was appointed a member of the Colonial Public Works Committee at the Colonial Office, in which connection he was concerned particularly with the reorganisation of the Madagascar railways. In 1937 M. Surleau was appointed by the Government to the post of Technical Commissioner to the Paris International Exhibition. He was more particularly in charge of the completion of the works and of the general working of the exhibition.

Monsieur F. Surleau

Appointed Assistant General Manager, French National Railways Company

Presentation to Sir Edward Beatty

Sir Edward Beatty, G.B.E., K.C., LL.D., Chairman and President of the Canadian Pacific Railway, was on January 21 the guest of about 100 officers of the system at a complimentary dinner in Montreal, at the conclusion of which he was presented with a bronze portrait bust of himself, to mark the completion of the 50th anniversary year of the Canadian Pacific Railway. Mr. D. C. Coleman, Senior Vice-President of the company, said that Sir Edward had been its guiding genius over the most trying period of its existence, and had won the loyal and enthusiastic support of his co-workers in all ranks and in all branches of the service. In accepting the presentation, Sir Edward said the company's past was no greater than its future would be. In recently past times of great prosperity and equally marked depression, Canadian Pacific officers had lost neither their heads nor their courage, and the high standard of their services to the country would continue.

As we close for press we learn with regret of the sudden death in Milan, on Wednesday, of Sr. Arturo Caprotti, the well-known Italian engineer and originator of the Caprotti valve gear for locomotives and other steam engines.

We regret to record the recent death in California of Mr. C. E. Friend, who retired in June, 1930, on account of ill-health, from the post of Assistant General Comptroller, Canadian National Railways. Mr. Friend, a native of Brighton, went to Canada in 1894 as Secretary to the Traffic

Manager of the Canadian Pacific Railway. He joined what is now part of the Canadian National system when appointed Secretary to the Superintendent, Winnipeg, of the Canadian Northern Railway in 1896.

Mr. W. H. Lacey, who has been appointed Chief Accountant, Central Uruguay Railway, was educated at Colfe Grammar School, Lewisham, and in 1918 joined the staff of Messrs.

Mr. W. H. Lacey

Appointed Chief Accountant, Central Uruguay Railway

Deloitte, Plender, Griffiths & Co., Chartered Accountants. In 1920 he was articled to Mr. P. G. Wilkins, F.C.A., a partner in the firm of Messrs. Woodman, Cox & Wilkins, Chartered Accountants, London. On being admitted a Member of the Institute of Chartered Acountants in 1926, he returned to Messrs. Deloitte, Plender, Griffiths & Co., where he remained until his appointment in November, 1937, as Chief Accountant of the Central Uruguay Railway. Mr. Lacey is 36 years of age, and is a keen Rugby player.

Señor Antonio Peña, who has been appointed Minister of Public Works in the new Government of Nationalist Spain, is a 50-year-old Professor of the Roads Engineering College of Madrid. He has specialised in the study of ferro-concrete, and is well known as the author of a large number of books on the subject. Among other works he was responsible for the design and construction of the 840-m. Tardienta aqueduct.

Señor Pedro Gonsalez Bueno, who is the Minister of Trade Union Organisation in the Nationalist Government, is a civil engineer and was General Manager of the Sociedad Iberica de Construcciones Electricas. He has represented Spain and Spanish interests at many international congresses and has frequently visited industrial establishments in Great Britain and the U.S.A.

We regret to record the death at Port Washington, New York, on February 6, of Sir Harry Gloster Armstrong. In 1891 he became associated with the Manchester Ship Canal Company, and at the time of his death was Commercial Adviser to that concern. From 1920 to 1931 he was British Consul-General in New York.

It is with regret that we record the death on February 1, at Ballincollig, Cork, of Mr. A. R. MacMullen, a Director of the Great Southern Railways, Eire. Mr. MacMullen was elected to the board when the company was formed, as representing the Great Southern & Western Railway. He had also been a Director of the former Cork, Bandon & South Coast Company.

Indian Railway Staff Changes

Mr. A. Cooper, Deputy Chief Operating Superintendent, N.W.R., has been permitted to retire from Government service as from December 12.

Mr. E. M. Cory has been confirmed provisionally as Chief Engineer, G.I.P.R., as from November 8 last, and Mr. F. G. Langdon has been confirmed provisionally as Deputy Chief Engineer, as from the same date.

Mr. J. H. F. Raper, Chief Traffic Manager, G.I.P.R., has been granted 7 months' leave as from November 1 last.

Colonel H. L. Woodhouse, M.C., late R.E., Director of Civil Engineering, Railway Board, and the Hon. H. T. de B. Bingham, Senior Government Inspector of Railways, Bombay, have been promoted as Chief Engineer, State Railways, in a provisionally permanent capacity, as from August 8 last. Mr. J. Mackinnon, officiating Chief Engineer, N.W.R., has been similarly promoted but as from November 6.

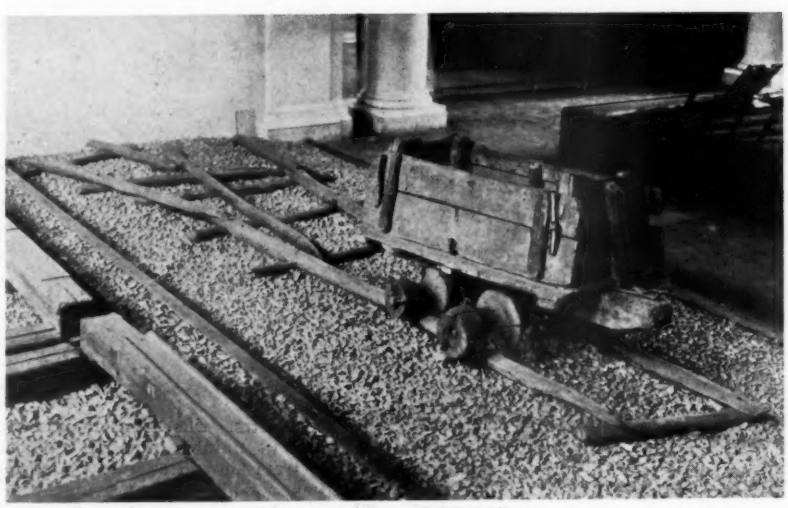
Messrs. R. E. Marriott and R. W. Taylor, and Rai Bahadar D. N. Batra have been promoted permanently to be Deputy Chief Engineer, State Railways, as from the above dates.

Mr. W. Hood, Deputy Chief Engineer, Bridges, G.I.P.R., has been granted 11 months' leave, as from November 19 last.

Mr. A. C. Vining has been appointed to officiate as Deputy Chief Operating Superintendent, N.W.R.

Mr. W. E. Gurney has been appointed to officiate as Deputy Chief Engineer (Bridges), G.I.P.R., as from November 19 last.

We regret to record the death on February 3, in Prague, of Dr. Karel Loevenstein, Chairman of the Skoda Works. Dr. Loevenstein joined the military administration of the Skoda Works at Pilsen on the outbreak of the war, and having rapidly distinguished himself by his organising talent was appointed Secretary General of the company in 1919, and Assistant Managing Director soon after. In 1923 he became Managing Director, and in 1934 was elected Chairman of the company. His great achievement was his conduct of the Skoda concern during the post-war period, when he effected the change from entirely military production to ordinary peace-time requirements without loss of business.



An illustration taken specially for "The Railway Gazette" by the Direktor of the Verkehrs-und Baumuseum, Berlin, of the wooden wagon and section of track stated to date from the 16th Century and to have come from the gold mines in Transylvania (Siebenbürgen). This vehicle was referred to in our issue of April 30 last

G.W.R. Chief Goods Manager's Office Dinner

Mr. A. Maynard, Chief Goods Manager, Great Western Railway, presided at the annual dinner of the Chief Goods Manager's Office, which was held on Friday, February 4, at the Chiltern Hall, Baker Street, when 280 past and present members of the staff and their friends attended.

As was the case last year, there were no speeches, but Mr. Maynard took the opportunity which the occasion afforded him of thanking his staff for its loyal support during the past year. Mr. Maynard stressed the fact that the excellent results obtained were due not to any particular individual, but to good team work and the wholehearted co-operation of the other departments.

Among those present were: Sir Ralph Cope, Chief Accountant; Messrs. R. Carpmael, Chief Engineer; F. C. A. Coventry, Superintendent of Road Transport; C. T. Cox, Divisional Superintendent, Paddington; C. R. Dashwood, Assistant General Manager; Major M. J. M'Dewar, Publicity Officer; Messrs. W. Elliott, General Manager, Pickfords; H. T. Forth, Assistant Accountant; H. H. Cavendish-Fuller, Chief Medical Officer; E. A. Glayzer, Staff and General Assistant to Superintendent of the Line; F. C. Hockridge, Assistant Surveyor and Estate Agent; W. H. Jarvis, Stationery Superintendent; J. A. Kay, Editor, THE RAILWAY GAZETTE; D. R. Lamb, Editor, *Modern Transport*; J. F. Lean, late Principal Assistant to General Manager; G. E. Orton, Commercial Assistant to Superintendent of the Line; F. H. D. Page, Signal and Telegraph Engineer; H. W. Payne, Principal Assistant to the Chief Goods Manager; H. J. Peacock, Operating Assistant to Superintendent of the Line; F. R. Potter, Superintendent of the Line; P. G. Robinson, Assistant Manager, Hotels & Refreshment Rooms; F. P. Sealey, Manager, G.W. Royal Hotel, Paddington; G. J. Walker, Late Manager, Hotels & Refreshment Rooms; H. Wheeler, Assistant to the General Manager; J. R. C. Williams, Stationmaster, Paddington.

The excellent programme of entertainment which had been devised included some particularly fine renderings by the G.W.R. Chief Goods "Glee Singers," whilst "Departmental Ditties" (reproduced in our "Scrap Heap" page this week), written, produced, and compèred by Mr. H. W. Payne (Principal Assistant to the Chief Goods Manager) were also well received.

The following stanzas appeared on the back of the menu card:—

In undisguised indifference to the jobs we haven't done,
We have left our various hiding places, offices and stations,
For the family re-union where every mother's son,
Enjoys himself along of his affectionate relations;
And the sentiments towards our most distinguished guests in greeting.
Is the warmest of receptions to our Annual General Meeting.

The Napoleonic maxim as to what an army marches on,
Expressed in elementary terms grammatically right,
Might be applied appropriately, you'll form the same opinion,
By observing the behaviour of our office staff tonight,
That is to say: the knife and fork, the trencher and the can,
Are essential in the progress of the Goods Department man.

This amateurish effort to excite your risibility,
Precedes an entertainment of a much superior kind,
And later if your glasses have reduced the visibility,
We'll be in the same condition and the blind shall lead the blind,
Or should our verse sound bellicose we've this disarming quality,
We've greater versatility with liquid hospitality.

Although no toast be spoken these lines are for a token,
Of regard, please don't regard them as a platitude;
Once more as each year closes and we count our gains and losses,
We testify your willingness to help with gratitude,
Believing, too, that each and all have but one end in view,
Salute you, Sir, as one of us, we're proud to welcome you.

L.M.S.R. London District Passenger Manager's Staff Annual Dinner

The 14th annual dinner of the London District Passenger Manager's staff, L.M.S.R., was held on February 4, at the Lysbeth Hall, Soho Square, when a company numbering 150 attended, with Major H. E. Roberts, London District Passenger Manager, in the chair, supported by Mr. T. C. Byrom. The following were among those present:—

Messrs. T. W. Royle, J. A. Milligan, F. E. Bailey, A. L. Castleman, G. W. Galloway, W. O. Davies, E. ff. Lascelles, G. H. Hussey, R. Bagwell, W. Foster (Director of Publicity, Blackpool), D. B. Falvey (Transport Manager, Royal Arsenal Co-operative Society), S. R. Skinner (New Zealand Government, London), G. W. Gould (Bentley Motors Limited), and members of the staff of the Chief Commercial and Chief Operating Managers' Departments.

Mr. W. Foster, in proposing the toast of the London Midland and Scottish Railway Company, referred to the company as a mighty trading organisation, of which the ramifications were far too extensive to be fully understood by the ordinary man in the street. The capital of over £400 million sterling was equivalent to the ownership of £10 stock by every man, woman, and child in the country. Mr. Foster also referred to the impending developments at Blackpool, which he hoped would be the means of attracting even more passengers to that resort, to the mutual benefit of the L.M.S.R. and the Corporation.

Mr. T. W. Royle, in responding, congratulated the staff on the good work performed in the past year, when the receipts in the London District showed an increase of no less than 4·98 per cent. over the preceding year compared with the line increase of 4·46 per cent., and with the extension of holidays with pay he hoped that further increased revenue would accrue to the company which they were privileged to serve.

Mr. H. E. Roberts proposed the toast of "The Visitors," and expressed the pleasure of himself and his staff in having amongst them as guests representatives of the trading interests of the company, officers of the company, and the former district officer, in the person of Mr. J. A. Milligan.

Mr. A. L. Castleman and Mr. J. A. Milligan responded.

An entertainment of musical and humorous items by Mr. Tom Brandon, and an exhibition of conjuring by Mr. Albert Warby, was greatly appreciated. The whole of the arrangements for a most enjoyable evening were made by Mr. Alban Jones and a small committee.

Accident and Casualty Returns, Japanese Government Railways

We have now received a printed copy of the English edition of the annual report of the Japanese Government Department of Railways for the year ended March 31, 1936. The accident and casualty returns given in this publication show that the number of accidents to trains reported during the working year totalled 6,662, on 27·2 per million train-kilometres, this being an increase of 1,347 in number and of 3·6 per million train-kilometres over the corresponding period of the previous year. The number of casualties from all causes during the year came to 3,562. This represents 14·6 casualties per million train-kilometres. As compared with the preceding year this is an increase of 56 in the total number and a decrease of one per million train-kilometres. The number of casualties caused by suicide was 1,826, or a decrease of 363 on the preceding year. The returns show that of the entire number of passengers, railway employees, and others killed on the railways, 31 deaths were attributable to accidents involving the trains or other vehicles of the Railways Department; 3,250 to accidents brought about by want of care on the part of the persons themselves; and 1,745 to suicides. The table of suicides is divided into "accomplished" and "attempted." There were 81 of the latter. The accounts of the Japanese Government Department of Railways for the year ended March 31, 1936, were dealt with in our issue of December 4, 1936.

XUM

The Dalkey Atmospheric Railway

At a recent meeting of the Old Dublin Society, Mr. Kevin Murray gave a very interesting lecture on the atmospheric railway between Kingstown (Dun Laoghaire) and Dalkey. His paper was in effect a continuation of the address* he gave to the same society a month earlier on the Dublin & Kingstown Railway. The latter extended at first to the west pier of Dun Laoghaire harbour, but the Admiralty decided to build a fine wharf which it was desirable for the railway to reach, and the company therefore sought powers in 1833 to build the necessary extension and also to proceed to Dalkey. The same Bill included a scheme for an extension at the Dublin end, and the whole proposal encountered such severe opposition that it was defeated. A much reduced scheme was sanctioned by Act of May 22, 1834, for the Kingstown harbour extension, but work was not begun until August, 1836; it was opened for public traffic on May 13, 1837.

In 1816 the Commissioners appointed for the erection of Kingstown harbour had built a tramroad from Dalkey to Kingstown to facilitate the conveyance of granite from the Dalkey quarries to the harbour site. The harbour was finished in 1859 but in 1838 the directors of the Dublin & Kingstown Railway endeavoured to lease one-half of the tramroad for conversion into a public railway using horse traction. The scheme was not proceeded with, but in 1840 the company propounded a further scheme for using half the tramroad for an atmospheric railway. The ceremony of handing over "sod and twig" took place on Monday, September 26, 1842; the civil engineering contract was then undertaken by William Dargan, and the atmospheric installation by Samuda Brothers. The new line diverged from the main line just north of Dun Laoghaire station, and did not extend as far as the present Dalkey station. The pumping engine was at Dalkey and the machinery consisted of a steam engine with a 34½-in. cylinder having a stroke of 5 ft. 6 in. The total length of the branch was 3,050 yd. of 4 ft. 8½ in. single track, but the air tube extended only 2,490 yd. The atmospheric apparatus drew the train to Dalkey and it coasted back to Dun Laoghaire.

The first trials took place on August 19, 1843, and thereafter passengers appear to have been carried unofficially and without charge on regular experimental trips, but official public traffic did not begin until Friday, March 29, 1844. On one occasion when the piston carriage was accidentally dispatched without a train attached the trip is stated to have been accomplished at an average speed of 84 m.p.h. The familiar difficulties with the leather longitudinal valve were experienced and on November 24, 1848, the cylinder of the air pump cracked, causing traffic to be suspended. The *Princess*, the first locomotive ever built in Ireland, was rebuilt to the restricted loading gauge of the line and maintained the service from December 23, 1848, until February 5, 1849, when the air pump was again fit for use. When the Dublin—Kingstown—Dalkey lines were included in the scheme for a through route between Dublin and Wexford it became impossible to continue working a section not built to the Irish standard gauge and using atmospheric motive power.

On April 12, 1854, the line was closed for conversion, and re-opened with steam traction in the following year. The conversion at this time, and the doubling of the line in 1877-80, obliterated much of Dargan's work, but traces of three different periods of construction may still be seen in a few places, and the path beside the site of the original station at Dalkey still bears the title "Atmospheric Road."

* See THE RAILWAY GAZETTE of December 24, 1937, page 1224.

Communication between Carriages

By courtesy of the *L.N.E.R. Magazine*, we reproduce on page 272 a photograph of a document recently discovered among some old Great Northern Railway papers. The original has been framed and hung in the luncheon room at Marylebone station. The particulars given beneath the diagram are:—

"This invention consists in having a passage way, say 18 inches wide, through the centre of each carriage, and doorways at the extremity of each, outside of which are projecting platforms, each say 2 feet wide by 17 inches long, as shown in A on the ground plan, or as enlarged in section B. These platforms or footboards are kept in contact by means of springs, which collapse or expand, as occasioned by the pressure of the buffers (in iron sockets). The footboards when not in use, or when required to get at the couplings, are turned up by means of a hinge as shown on last carriage in the Elevation sketch or as enlarged in section C. The doors at the extremities of each carriage will be glazed in the upper panel, as shown above, thus obtaining a continued sight from one end of the train to the other. For the greater safety of Passengers crossing the platform, slack chains attached to each carriage and fastened in the centre should be used as a handrail."

"To George Hussey Packe, Esq., M.D.

"We beg to hand you particulars of our Patent with a few of its advantages:

"Direct communication from one end of the train to the other whilst in motion."

"Prevention from all insults, murders and robberies."

"Any Passenger finding his Company disagreeable may move to another Compartment."

"In the event of Fire or Accident the passengers may be removed by the Guard from one Carriage to another with perfect ease."

"To save time the Guard may collect the Tickets previous to the arrival at any Station."

"The loss sustained by Shareholders under the present system is very considerable, as hundreds of passengers prefer the 3rd Class rather than being boxed up in the 1st or 2nd without protection, while numbers do not travel at all for the same reason."

"The estimated cost of converting the present carriages agreeably with the above will average £12 per Carriage.

"Sliding seats in the passage way may be used if necessary, also to preserve privacy in 1st Class Carriages sliding doors may be used if required.

"Should it be remarked that to make the necessary alterations great expense would be incurred, it is suggested that one penny per head on each journey would amply repay the outlay, no person would object to so trifling a charge having accommodation, light, ventilation and security.

"Stone Bridge, Bristol.

"CHUBB & FRY"

January 30, 1866.

New Train and Traffic Control Office, Sunderland, L.N.E.R.

The L.N.E.R. announces that a new train and traffic control office in the North Eastern Area, additional to those recently established at Newcastle-upon-Tyne and York (described and illustrated in our issue of December 31 last), is to be provided at Sunderland. This control will supervise the very heavy industrial traffic passing over 136 miles of line serving the south bank of the river Tees and the North Durham coalfield. The controllers, who will be in attendance day and night, will be connected by special automatic telephone circuits with the signal boxes and other strategic points in the area. At busy times such as Bank Holidays when there is very heavy traffic to the coast stations, especially South Shields, the passenger trains will also be controlled from the Sunderland office.

One of the features of this particular district is that the greater part of the freight train business is done when passenger traffic is also heavy, as coal shipment at the ports takes place very largely during the daytime. There is, therefore, need for the closer supervision which the control system will afford to ensure that the best possible use is made of the railway tracks, to effect the working of the freight trains in such a manner that delay to passenger trains shall be avoided, and to prevent congestion at stations and marshalling yards.

PARLIAMENTARY NOTES

Progress of Railway Bills

A formal first reading has been given to the following Bills: L.N.E.R., L.M.S.R., and Southern Railway.

L.M.S.R. Bill

This seeks, *inter alia*, to empower the company to construct works and to acquire lands; and to amend the superannuation scheme of the company.

L.N.E.R. Bill

Two petitions have been lodged against the London & North Eastern Railway Bill which is due for consideration during the present Parliamentary session. The Bill seeks, among other things, power for the company to widen certain of its railways, to construct other works in connection with its undertakings, and to acquire lands. The objectors are given as Messrs. Sheppard and the trustees of the will of the late Marcar David.

Southern Railway Bill

The following have lodged petitions against the Southern Railway Bill: Dartford Rural District Council, Frank William Ladds, Eliza Mary Edwards. This Bill seeks to empower the company to construct works and to acquire lands; to extend the time for the compulsory purchase of certain lands; to make provision with reference to the rates, rents, tolls, and charges which may be levied at the Southampton docks of the company; and to confer further powers upon the company.

Brighton Corporation Transport Bill

Petitions by the following have been lodged against the Brighton Corporation (Transport) Bill: Hove Corporation, Southern Railway, Southdown Motor Services Limited, Brighton, Hove & Worthing Gas Company. The Bill seeks, *inter alia*, to confirm an agreement between the corporation and the Brighton, Hove & District Omnibus Co. Ltd. for the provision and working in co-ordination of passenger road transport and the sharing of the revenues thereof; to confer powers upon the corporation and the company in connection with the running of trolleybuses; to enact provisions in respect to the abandonment by the corporation of its tramways and with respect to Volk's Electric Railway.

London Transport Bill

Petitions totalling 34 have been lodged against the London Passenger Transport Board Bill which is due for consideration during the present session of Parliament. The Bill seeks, *inter alia*, to empower the board to provide certain further services of trolleybuses; to construct new works; to acquire lands; and to extend the time for the compulsory purchase of certain lands and the completion of certain works. The objectors, who are chiefly local authorities and electricity supply companies, include Barking, Bexley, Ilford, Mitcham, Leyton, Epsom and Ewell, Finchley, East Ham, West Ham, Bromley, Hornsey, Watford, Croydon, Walthamstow, Reigate, St. Albans, and Romford Corporations; Corporation of London, Westminster City Council, St. Marylebone Borough Council, Kensington, and other Metropolitan Borough Councils; the County Councils of Surrey, Bucks, East and West Sussex, Essex, Bedford, Kent, and Middlesex; United Dairies and London Wholesale Dairies; Maurice Ernest; companies supplying electricity within the administrative county of London; and the Wardens and Governors of the Free Grammar School of Sir Roger Cholmeley in Highgate.

Gateshead Corporation Bill

Petitions against the Gateshead Corporation Bill, which seeks powers to enable the corporation to acquire the tramways of the Gateshead & District Tramways Company, have been lodged by the Northern General Transport Co. Ltd., and the Sunderland District Omnibus Co. Ltd.

QUESTIONS IN PARLIAMENT

Accident at Millwall Railway Arches

Mr. W. Thorne (Plaistow—Lab.) on February 1 asked the Secretary of State for the Home Department how many workmen were injured in the demolition of the disused railway arches in East Ferry Road, Millwall, on Wednesday, December 22; if he was aware that a workman was killed four weeks previously when an adjoining arch fell; and if he could give the House further information on the subject.

Sir Samuel Hoare (Home Secretary): I understand that one man was injured on the date in question, being struck by a small piece of brickwork thrown from above, and that he was treated at hospital for a minor scalp injury but not detained there. No collapse of an arch occurred, as reported in certain newspapers. As regards the accident on November 12, I would refer to the reply given to a question by the hon. member on the 18th of that month.

Late Mail Trains

Mr. E. H. Keeling (Twickenham—C.) on February 7 asked the Postmaster General whether he was aware that, owing to the frequently delayed arrival of the mail train at Euston, the mails had at least once a week been reaching Twickenham, Hounslow, Isleworth, and Brentford too late for delivery by the first post; and whether he would urge the L.M.S.R. to be more punctual.

The Postmaster General (Major G. C. Tryon): I am aware that the connection with the first delivery at these places sometimes fails owing to the late arrival of the mail train. Special attention is being given to the working of this train with a view to avoiding such failures.

Telephone from Trains

Mr. H. Day (Southwark Central—Lab.) on February 7 asked the Postmaster General what had been the result of the experiments made for the purpose of developing the possibility of telephonic communication from railway trains in Great Britain.

The Postmaster General (Major G. C. Tryon): So far the experiments have indicated that, while the problem is not free from difficulty, it is probably capable of a satisfactory solution; but the costs would be disproportionate to the revenue anticipated. In these circumstances, and in view of the heavy pressure of urgent work, it is not practicable to undertake further development of such a service at present.

Mr. Day: Can the Postmaster General say what the cost would be, and whether the experiment has been successful on the Continent?

Major Tryon: I cannot say what the cost would be or to what extent the experiment has been successful on the Continent. I understand that Germany is not proceeding further with this development.

Railway Accidents

Mr. J. Tinker (Leigh—Lab.) on February 9 asked the Minister of Transport how many accidents had taken place on the railways during the last 12 months through a moving train coming in contact with a stationary one; and how many lives had been lost.

Dr. Leslie Burgin (Minister of Transport): Provisional figures for 1937 show that there were 77 accidents of this nature. In 75 of these accidents no one was killed. In the remaining 2, which occurred at Battersea and Castlecary, the fatalities were 10 and 35 respectively.

Report on Rates and Services

Mr. R. Grant-Ferris (St. Pancras, N.—U.) on February 9 asked the Minister of Transport whether he was in a position to announce the Government's intentions in respect of the recommendations of the Transport Advisory Council in its report on rates and services.

Dr. Leslie Burgin: Yes, sir. The Government accepts the broad principles of the report of the Transport Advisory Council on Rates and Services, and proposes in due course to introduce legislation accordingly. I intend to take an early opportunity of consulting interested organisations on points of detail.

XUM

STAFF AND LABOUR MATTERS

Shipyard Wages

A provisional agreement affecting wages, hours, and conditions was reached at a conference in London on February 4 between representatives of the Shipbuilding Employers' Federation and the shipyard trade unions. The full claim of the unions was an advance of 6s. a week to plain time-workers, and 2½ per cent. for each 1s. to pieceworkers; holidays with pay; consolidation of bonus into wages; the right of the unions to negotiate in respect of apprentices, boys, and youths. Provisional terms for a settlement cover a wages advance and payment for holidays. Apprentice boys and youths will also be covered and will also receive holidays with pay. The executives of the union will meet at York on February 16 to ratify the terms.

Steel Workers—Wages

Following the recent official ascertainment of the average selling price of steel plates, British steel workers receive a wage advance of 5 per cent. on base rates from February 6. Under the sliding scale agreement which governs the wages of production operatives in the heavy side of the industry, wages are increased by 1¼ per cent. on base rates for each rise of 2s. 6d. per ton in the ascertained selling price of steel plates. The recent sales return was about £9 14s. per ton, and wages accordingly advance from 42½ per cent. to 47½ per cent. above base.

Railway Shopmen—Industrial Court Decisions

Award No. 1696.—The Industrial Court sat on January 25 to determine the claims of W. H. Perkins and F. Brook, employed by the Southern Railway Company as wagon builders and repairers, Grade II, in the Carriage and Wagon Department at Exmouth Junction, for regrading as wagon and horse-box builders and repairers, Grade I. In support of the claim the National Union of Railwaymen submitted that the men concerned are employed on all classes of repair work required to be done on wagons, and mark out the material required from rough timber. Apart from the use of a small circular saw and a morticing machine the work is performed by hand. The men have to possess an extensive knowledge of their craft as all classes of the company's stock (including horse boxes) pass through the shop and it was claimed that they conform to the conditions laid down in Note 2, Schedule "B" of Industrial Court Award No. 728, applicable to the qualifications of craftsmen, Grade I. As against the claim it was submitted that at Exmouth Junction the wagon builders and repairers are engaged generally on light wagon repairs, the heaviest job undertaken being the renewal of headstocks. The men are not required to mark out or work from drawings, nor are they required to repair horse boxes. The Court by decision No. 1,696, dated February 3, ruled that having regard to the nature of the wagon repair work done at the depot, the qualifications of the men concerned, and the grading of wagon repairers at the depot when Award No. 728 came into operation, the claim of the men concerned to be classed as wagon and horse-box builders and repairers, Grade I, had been established and that W. H. Perkins and F. Brook shall be so graded and be paid the rate previously paid to such Grade I men at the depot, viz., 43s. per week, plus bonus.

Award No. 1697.—The Industrial Court sat on January 25 to determine the claim of the staff employed in the repair shops at Peckham Rye, Slades Green, and Wimbledon, in the Electrical Department of the Southern Railway Company, for a special allowance under the provisions of Clause 11, Schedule "F," of Industrial Court Decision No. 728. In support of the claim the National Union of Railwaymen submitted that the dirt and grease scraped from the bogies and component parts form mounds in the pits and on the floor round the pits. During the process of re-assembling, old oil and paraffin are used for brushing on the parts and in a short time the floor becomes grease-coated to a depth of about half an inch. The men have to provide themselves with overall jackets and trousers which require cleaning every week and they have also constantly to buy fresh footwear. There are no leads for pit lights and the men working in the pits use duck lamps with a naked light which form a source of danger when the men are required to work with them in cramped positions. The dirty condition of the floors is further aggravated on wet days by coaches being brought in after standing outside in the rain. The lengthening of the trains, *e.g.*, the Brighton six-car train, has still further limited the working space available in the shops, and lifters and others employed in the shops cannot avoid coming in contact with the accumulation of grease and dirt. It was also submitted that there had been a progressive speeding up process at the shops under which the time allowed for a general overhaul had been reduced, so that whereas it may have been possible in the past for the men to have found time occasionally to clean up around them, the speeding up process makes this no longer possible. As against the claim it was submitted that the men concerned in the application are performing the ordinary and customary duties of their class and that the work is neither exceptionally dirty nor dangerous, nor generally different from similar work performed by men in the grades concerned in the other workshops of the company. The speeding up of the work and the increase in the amount of stock to be dealt with have been provided for by an increase in the number of men employed. Between the period of shunting a unit after overhaul, and an incoming unit which has to be repaired, the shops and pits where the work has been done are cleaned up. It was stated that the Peckham Rye repair shop was opened in 1909, the Wimbledon repair shop in 1915, and the Slades Green repair shop in 1925, and there have been no changes in the nature of the work since the repair shops were opened. The Court by decision No. 1,697, dated February 3, found against the claim.

Vickers Staff Pension Scheme

Vickers Limited announces that for some time past its directors and the boards of the subsidiary companies have been giving consideration to the introduction of a pension and life assurance scheme for the members of the staffs. As a result, schemes have been arranged which it is hoped will come into operation on March 1 next. Detailed particulars of the schemes are being put before the members of the respective staffs in the course of the next few days. The eventual adoption of the schemes (as is usual in these cases) is contingent on an agreed percentage of the eligible members electing to join. In future it will be compulsory for all new members of the staffs to enter. The members of the staffs who will be offered participation in the schemes number between 6,000 and 7,000.

INSTITUTE OF METALS.—Variations of the procedure of the past thirty years have been made by the council of the Institute of Metals in connection with the forthcoming annual general meeting of the institute. By the new arrangement, official business is to be divorced from the reading and discussion of papers. Thus, the meeting will begin in the evening of Tuesday, March 8, with the presentation of the annual report of council, the election of the council for 1938-39, and the delivery of his inaugural address by the new President. The morning and afternoon sessions of the following day, March 9, will be devoted to the presentation and discussion of eight papers. All this portion of the proceedings will be completed between 10 a.m. and 4.30 p.m., instead of covering two days as heretofore. The closing day of the meeting—Thursday, March 10—will have two sessions: a morning one devoted to a general discussion on "The Training and Employment of Metallurgists" (opened by Professor R. S. Hutton, of Cambridge), and an afternoon series of visits to works of metallurgical and engineering interest. The institute's annual dinner, on March 9, is to be at Grosvenor House, Park Lane. The meetings will be held at the Institution of Mechanical Engineers. A programme of all the events on March 8-10, can be obtained from Mr. G. Shaw Scott, Secretary of the Institute of Metals, 36, Victoria Street, London, S.W.1.

RAILWAY AND OTHER REPORTS

Southern Railway Company.—The directors announce that there is an increase of £1,312,769 in the gross receipts for the year 1937 as compared with the previous year, and of £325,964 in the net revenue. They have resolved to recommend the proprietors to declare the following dividends: A final dividend of 3 per cent. on the preferred ordinary stock, making, with the interim dividend of 2 per cent. already paid, 5 per cent. for the year; 1½ per cent. for the whole year on the deferred ordinary stock. For the previous year a dividend of ½ per cent. was paid on the deferred stock. The balance carried forward is £226,804, compared with £220,809. It is intended to pay the dividends on Thursday, March 3.

Great Southern Railways (Ireland).—The directors of the company, at their meeting on February 4, decided to recommend that a dividend at the rate of 4 per cent. per annum be paid on the 4 per cent. guaranteed preference stock for the year ended December 31, 1937. The directors regret that no profits are yet available for dividends on the preference and ordinary stocks of the company.

London Passenger Transport Board.—The board announces that a payment on account of interest on London Transport "C" stock for the financial year ending June 30, 1938, will be made by the board's registrar, the Bank of England, on March 28, 1938, to all holders of London Transport "C" stock whose names are registered or inscribed in the books of the Bank of England at the close of business on March 1, 1938, such payment to be at the rate of 1½ per cent., less income tax at 5s. in the £.

Manchester Ship Canal Company.—The directors, at a meeting on February 7, resolved to recommend at the ordinary general meeting to be held on February 24 the declaration of the following dividends: 3½ per cent. on the Manchester Ship Canal Corporation preference stock; 4 per cent. on the preference shares; and 2 per cent. on the ordinary shares. A sum of £35,000 has been placed to reserve for contingencies and repairs, as against £36,204, leaving £31,701 to be carried forward, as compared with £31,952 last year.

Forth Bridge Railway Company.—For the year 1937 the balance credited to the working company, the L.N.E.R., was £1,861, as compared with £1,983 in 1936 and £2,015 in 1935. Traffic receipts from the L.N.E.R. were £178,000, against £177,000 for 1936 and £175,000 for 1935, and the net receipts, after deducting expenses of maintenance of works, general charges, rates, freight rebates fund-rate relief, insurance, &c., amounted to £130,032, against £130,147 in 1936 and £130,080 in 1935. Net revenue was £123,794, against £123,916. After providing for interest on 4 per cent. debenture stock and for a dividend of 4 per cent. (£93,000, same as in the previous year) on the ordinary stock, there was a balance of £1,861, as above stated.

International Railways of Central America.—Preliminary annual figures show railway operating revenue $5,699,442, compared with $4,951,573 in 1936. Income available for fixed charges is given as $2,259,093, against $2,070,035, and the total of the fixed charges being $1,156,665, net income is $1,102,428, against $677,981 in 1936. Total income for 1937 excludes approximately £125,000 previously credited in respect of income on sinking fund bonds, while the figure for the total fixed charges has been correspondingly diminished. A dividend of $1·25 has been declared on the preferred shares, payable on February 15.

Thomas Tilling Limited.—Net profit for 1937 was £456,398, compared with £404,610, and while allocating £100,844 (against £50,000 to general reserve), the directors have recommended a capital distribution of 25 per cent. by way of bonus shares, and maintenance of the dividend on the £3,296,000 of ordinary capital at 10 per cent. Since 1930 the company has capitalised for distribution to shareholders a total of £2,241,300 of reserves. The directors have revalued the holding of ordinary shares in Tilling & British Automobile Traction Limited, and their increase in value of £1,164,362 has been added to the reserve fund. To make provision for the capital bonus the nominal capital of the company is to be increased from £3,750,000 to £4,500,000.

Forthcoming Meetings

Feb. 23 (*Wed.*).—**Great Western Railway Company** (Annual General), Paddington Station, London, W.2, at 11.30 a.m.

Feb. 24 (*Thurs.*).—**Southern Railway Company** (Annual General), Southern House, Cannon Street Station, E.C., at 11.30 a.m.

March 4 (*Fri.*).—**London & North Eastern Railway Company** (Annual General), Wharncliffe Rooms, Hotel Great Central, Marylebone Station, N.W.1, at 2 p.m.

March 10 (*Thurs.*).—**London Midland & Scottish Railway Company** (Annual General), Friends' Meeting House, Euston Road, N.W.1, at 11.30 a.m.

Forthcoming Events

Feb. 11 (*Fri.*).—Institute of Transport (Newcastle), at Royal Station Hotel, 7.30 p.m. "A Chamber of Commerce at Work," by Mr. G. Ritson.

Institute of Transport (Newcastle Graduate), at Royal Station Hotel, 6 p.m. "The Work of a Dock and Harbour Authority," by Mr. R. Aughton.

Institute of Welding (Midlands), at James Watt Inst., Newhall Street, Birmingham, 7.30 p.m. "Practical Oxy-Acetylene Welding," by Mr. G. Musted.

Feb. 12 (*Sat.*).—Stephenson Locomotive Society (Midlands-Northern), at 4, Bury Old Road, Manchester, 6.30 p.m. "John Ramsbottom and his Locomotives," by Mr. F. Hambleton.

Feb. 14 (*Mon.*).—Institute of Transport (London), at Inst. of Electrical Engineers, Savoy Place, W.C.2, 5.30 p.m. "Harbour Accommodation Services and Charges, in Relation to Coasting and Overseas Trades," by Mr. H. Hopperton.

Institution of Automobile Engineers (Derby), at Technical College, 7.30 p.m. "Automobile Gears," by Mr. W. Tuplin.

Institution of Electrical Engineers (Western), at Merchant Venturers' Technical College, Bristol. "Observations on the Motive Power Practice of Electrified Railways in Europe and in North America," by Mr. F. Barwell.

Stephenson Locomotive Society (London), at King's Cross Station, L.N.E.R., 6.30 p.m. "Men and Engines," by Mr. H. Freckelton.

Feb. 15 (*Tues.*).—Institute of Transport (Bristol). "Railway Passengers—Criticisms and Suggestions," by Mr. D. Eyres.

Institute of Transport (Leeds Graduate), at City Transport Department, 7 p.m. "Transport and Planning," by Mr. M. Cameron.

Institute of Welding (London), at Inst. of Mechanical Engineers, Storey's Gate, S.W.1., 6.30 p.m. "The Development of Oxy-Acetylene Welding and Cutting in France and Overseas," by Mr. P. Philippon.

Institution of Civil Engineers, Great George Street, London, S.W.1, 6 p.m. "The Deformation and Fracture of Metals," by Messrs. H. Gough and W. Wood.

Permanent Way Institution (Brighton), at Mess Room, New England Street, 7 p.m. "Advantages of Shovel Packing over Beater Packing," by Mr. Ledger.

Feb. 16 (*Wed.*).—Institution of Automobile Engineers (Leeds), at Metropole Hotel, 7.15 p.m. "Transmission Gear Developments and the Possibilities of Simplified Control," by Mr. L. Shorter.

Institution of Electrical Engineers, Savoy Place, W.C.2, 6 p.m. "High Speed Protection as an Aid to Maintaining Electric Service following System Short Circuits," by Messrs. T. Ross and C. Ryder.

Feb. 17 (*Thurs.*).—G.W.R. (London) Lecture and Debating Society, at Bank of England, 5.45 p.m. Debate with Bank of England Debating Society: "That Modern Advertising is an Insult to Public Intelligence." Affirmative: Bank of England Society. Negative: G.W.R. Society.

Institute of Welding (Leeds), at Griffin Hotel, 7.30 p.m. "Metallurgy and Welding of Stainless Steels," by Mr. C. Hall.

Institution of Locomotive Engineers (Scottish), at Royal Technical College, George Street, Glasgow, 7.30 p.m. "Maintenance in Service," by Mr. J. Fyfe.

Institution of Structural Engineers (Yorkshire), at Hotel Metropole, Leeds, 7 p.m. "Cementation."

Permanent Way Institution (Nottingham-Derby), at Bridgeway Hall, Nottingham, 7.15 p.m. "Permanent Way Drainage," by Mr. R. Coward.

Railway Club, at Royal Scottish Corporation Hall, Fetter Lane, London, E.C.4, 7.30 p.m. Annual General Meeting. "Railways in Law: Grains of Railway History Gleaned from the Law Reports," Presidential Address by Mr. Kenneth Brown.

Railway Students' Association (Edinburgh), at Glasgow. Debate with Glasgow Railway Lecture and Debating Society: "That a Mid-Scotland Ship Canal is a National Necessity." Affirmative: Railway Students' Association. Negative: Glasgow Railway Society.

Railway Students' Association (London), Houghton Street, W.C.2, 6 p.m. "Training of Railway Staffs, with Special Reference to the L.M.S.R. School of Transport," by Col. L. Manton, R.E.

Feb. 18 (*Fri.*).—Institute of Transport (East Midlands), at Guildhall, Nottingham 7 p.m. "Goods Station Terminal Working," by Mr. J. Kirkwood.

Institution of Mechanical Engineers, Storey's Gate, London, S.W.1, 5.30 p.m. Annual General Meeting.

XUM

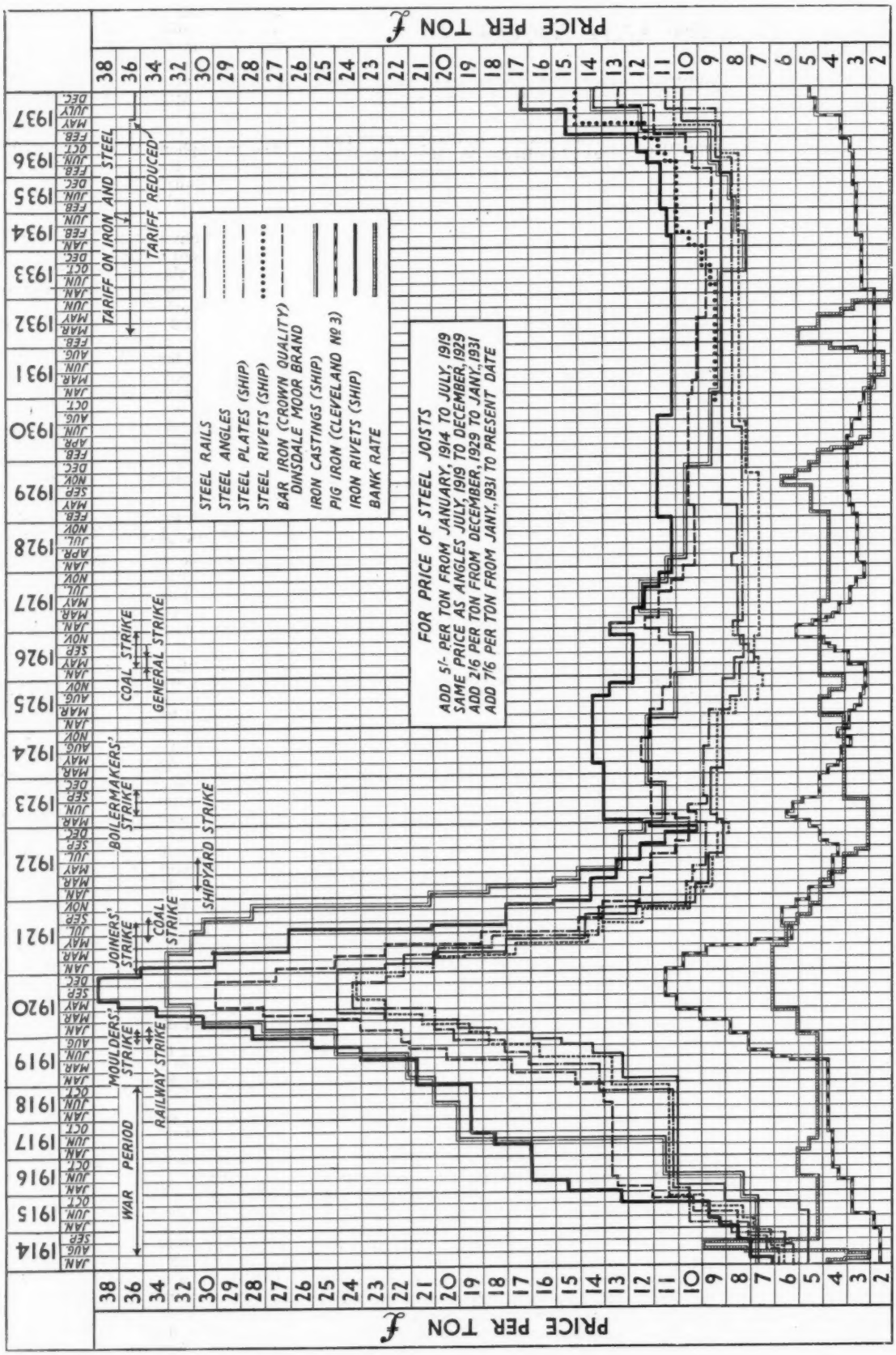

PRICE PER TON £
38 36 34 32 30 29 28 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2
1914 1915 1916 1917 1918 1919 1920 1921 1922 1923 1924 1925 1926 1927 1928 1929 1930 1931 1932 1933 1934 1935 1936 1937
WAR PERIOD
MOULDERS' STRIKE
RAILWAY STRIKE
JOINERS' STRIKE
COAL STRIKE
SHIPYARD STRIKE
BOILERMAKERS' STRIKE
COAL STRIKE
GENERAL STRIKE
TARIFF ON IRON AND STEEL
TARIFF REDUCED
STEEL RAILS
STEEL ANGLES
STEEL PLATES (SHIP)
STEEL RIVETS (SHIP)
BAR IRON (CROWN QUALITY) DINSDALE MOOR BRAND
IRON CASTINGS (SHIP)
PIG IRON (CLEVELAND Nº 3)
IRON RIVETS (SHIP)
BANK RATE
FOR PRICE OF STEEL JOISTS
ADD 5/- PER TON FROM JANUARY, 1914 TO JULY, 1919
SAME PRICE AS ANGLES JULY, 1919 TO DECEMBER, 1929
ADD 2/6 PER TON FROM DECEMBER, 1929 TO JANY., 1931
ADD 7/6 PER TON FROM JANY., 1931 TO PRESENT DATE

Chart showing the fluctuations in the prices of steel and other materials during the period 1914–1937. This is reproduced from a large coloured chart compiled by W. Richards & Sons Ltd. of Middlesbrough

NOTES AND NEWS

Mechanical Engineers Summer Meeting.—The summer meeting of the Institution of Mechanical Engineers will be held at Cardiff from May 30 to June 4. A local reception committee has been formed, of which Major N. W. Coe, M.I.Mech.E., has been appointed Honorary Secretary.

Castlecary Accident, L.N.E.R.—David Anderson, the driver of the 4.3 p.m. Edinburgh-Glasgow express, which was involved in the collision at Castlecary, on December 10, when 35 persons lost their lives, was arrested in Edinburgh, on Wednesday, and charged at Dumbarton Sheriff Court with culpable homicide. The proceedings were formal, and he was released on bail.

Railcar Collision in France.—Two railcars collided at Randonnai on the Mortagne-Laigle line, French National Railways, Western Division, on February 6, resulting in the death of five passengers and injuries to 25 others. All passengers killed were in the car from Laigle, the lighter of the two, which was telescoped by the car coming from Mortagne.

Railway Plans for the New Berlin.—Professor Speer, the architect entrusted by Herr Hitler with the replanning of Berlin, has announced a scheme in which the Potsdamer and Anhalter stations would be removed, and the lines from the south now terminating there would be accommodated in a single new station near the Tempelhof aerodrome on the southern edge of the city. Similar plans are put forward for railways entering the city from the north.

Railway Conference with U.S.A. President.—It was announced on February 6 that President Roosevelt would shortly hold a conference with members of the Interstate Commerce Commission, the Senate Committee of Investigation into railway financing, and other bodies regarding the financial difficulties of the U.S.A. railways. It is likely that the conference will be delayed until after publication of the Interstate Commerce Commission's decision regarding the application by the railways for a 15 per cent. increase in charges.

New S.R. Line to Chessington.—Rapid progress is being made with the first section of the new Southern Railway line from Motspur Park to Chessington, which it is hoped will be opened at the end of May. In the first section there will be two new stations—Malden Manor and Tolworth—and a new service of trains from Waterloo to Tolworth will be inaugurated which it is hoped will considerably relieve the trains from Waterloo to Epsom, and Leatherhead *via* Motspur Park. The new line to Chessington when completed will provide a further two new stations, which will be called Chessington Court and Chessington Grange. The building of the line has involved considerable engineering difficulties, including no fewer than nine bridges over public roads, and a 140-ft. viaduct across the Hogsmill River.

The Jersey Railways & Tramways Limited.—Mr. Harold M. Moore, the Liquidator of this company, has given notice that all creditors or other persons having any claims or demands against the company and who have not yet filed such claims are required to send particulars in writing on or before February 24, 1938.

Munich Railway Re-arrangement.—A special office, or *Reichsbahnbaudirektion*, has been set up at Munich, as from January 1, to deal with the proposed re-arrangement of lines in the city and neighbourhood. The office will prepare all necessary plans, conduct all preliminary negotiations concerning acquisition of property and related matters and carry out the work. The office has the rank of an ordinary divisional management and Vice-President Koll has been placed in charge.

Debt Payment to Cuban Railways.—The Cuban Senate has approved a Bill for the payment of $22 million (£4,400,000) to the railways, including the British-owned United Railways of the Havana, in payment of debts arising from the carriage of passenger and goods traffic by the railways on behalf of the Government. It still remains for the Bill to be approved by the President. The Government will issue bonds to the value of $10,174,000 towards payment of the debts.

The Railway Position in China.—The twin cities of Hankow and Wuchang are at present practically the centre of the entire Chinese railway system, inasmuch as the Chinese are withdrawing their entire rolling stock from all lines which are menaced by the advance of the Japanese armies. Locomotives, passenger and freight cars from practically every railway administration in China, with the exception of one or two isolated lines, are now at Hankow. It is like an amazing exhibition of Chinese railway material, the more interesting because the newest additions to Chinese rolling stock and the latest types of locomotives had been rescued first and can be seen standing together on the railway yards at Hankow and Wuchang.

Loudspeakers at Edinburgh Waverley, L.N.E.R.—The L.N.E.R. has installed loudspeakers at Waverley station, Edinburgh, for directing passengers and making announcements as occasion arises. This installation proved very useful on February 5 in the handling of the very large crowds returning from Edinburgh to all parts after the international match at Murrayfield. The system consists of four moving-coil horn type projectors connected to a six-valve amplifier giving an undistorted speech output of 15 watts. The microphone is of the moving coil type and the whole equipment operates from the a.c. public supply mains. The output from the amplifier is adjusted to suit the number of loudspeakers connected at any one time and a switching arrangement enables any combination of speakers to be used. The energy consumption is 125 watts. The microphone is located in a box situated on one of the platforms. A similar installation will also be used at Portobello and Gorgie stations on busy occasions.

Improvements to Scarborough Refreshment Rooms, L.N.E.R.—The directors of the L.N.E.R. have authorised improvements to the refreshment rooms at Scarborough station at a cost of over £2,000. The rooms will be enlarged, made attractive with improved lighting, new furniture, and redecoration, and will be provided with an up-to-date counter and equipment. The dining room will be redecorated and refurnished and the kitchen accommodation rebuilt and modernised. Central heating is to be introduced throughout the building. Tenders are shortly to be invited for the alterations.

Buenos Aires Transport

Under the terms of a Bill for co-ordinating urban transport, passed in September, 1936, the Argentine Government was authorised to constitute a City of Buenos Aires Transport Corporation.

In January of last year a special commission was set up to determine capital values of the undertakings affected and to decide upon the structure of the corporation. It is now reported from Buenos Aires that the Government has approved the new consortium, subject to reference to the affected parties. The total nominal capital of transport undertakings operating in the city is approximately £30,000,000. The capital of the new corporation will be divided as follows: Tramways 432,635,000 pesos, buses 58,681,000 pesos, and *colectivos* or micro buses 31,122,000 pesos. Details of the distribution are given in the following table:—

	Pesos
Anglo-Argentine Tramways Company	210,167,301
B.A. Lacroze Tramways	36,026,998
B.A. Central Railroad and Terminal	62,875,750
B.A. Town and Dock Tramways	10,064,242
Southern Electric Tramways ...	7,740,556
Hispano-Argentine Subways (including authorised lines) ...	105,759,755
Bus companies ... ... including the following:—	58,681,417
Anglo-Argentine Co.'s Central ... 4,815,132	
Anglo-Argentine Co.'s S.A.T.I.A. ... 4,905,758	
Micro Buses (3,035 vehicles) ... 31,121,617	
Government of the Republic ...	38,719,594
Buenos Aires Municipality ...	109,527,242

The new decree states that the tariffs will be just and reasonable, assuring the shareholders a maximum of 7 per cent. to cover interest and sinking fund, which will be established six years after the initiation of the scheme and will be spread over 56 years.

XUM

The "Glass Age" Exhibition Train

Mr. Robert M. Holland Martin, Chairman of the Southern Railway, performed the opening ceremony of the "Glass Age" exhibition train, on Tuesday last, at Victoria station, London. This train, which is probably the most ambitiously conceived of its kind, consists of two ex-L.N.E.R. coaches which have been fitted up by Pilkington Bros. Ltd., of St. Helens and Doncaster, with gadgets demonstrating almost every known use of glass, a great many of which are unsuspected by the average person. The train began its journey round the country last November, has already been shown at many northern and midlands towns, and will continue its progress after this week in the south of England. To date, it has travelled many thousands of miles almost entirely by express services and the fact that during this time no breakage or other damage was suffered in its sumptuously-fitted interior indicates that glass as a decorative medium can be employed successfully in railway carriages, where the novel and striking treatment which its use permits, throws new light on the possibilities of the interior treatment of luxury trains.

CLOSING OF TRAMORE-WATERFORD LINE OPPOSED.—Residents of Tramore, the well-known Eire resort, have decided to appoint a committee to make representations to the directors of the Great Southern Railways against the proposed closing, partly or totally, of the Tramore-Waterford Line. They contend that both the existing rail and bus services are necessary, but that at present they lack co-ordination.

ADDRESS CHANGE.—The Birmingham office of the United Steel Companies Limited has been moved to Union Chambers, Temple Row, in that city. The new telephone number is Midland 6321.

British and Irish Traffic Returns

GREAT BRITAIN	Totals for 5th Week			Totals to Date		
	1938	1937	Inc. or Dec.	1938	1937	Inc. or Dec.
L.M.S.R. (6,855½ mls.)	£	£	£	£	£	£
Passenger-train traffic...	384,000	363,000	+ 21,000	1,905,000	1,820,000	+ 85,000
Merchandise, &c. ...	494,000	480,000	+ 14,000	2,383,000	2,340,000	+ 43,000
Coal and coke ...	310,000	298,000	+ 12,000	1,555,000	1,419,000	+ 136,000
Goods-train traffic ...	804,000	778,000	+ 26,000	3,938,000	3,759,000	+ 179,000
Total receipts	1,188,000	1,141,000	+ 47,000	5,843,000	5,579,000	+ 264,000
L.N.E.R. (6,315 mls.)						
Passenger-train traffic...	257,000	248,000	+ 9,000	1,281,000	1,234,000	+ 47,000
Merchandise, &c. ...	338,000	300,000	+ 38,000	1,637,000	1,588,000	+ 49,000
Coal and coke ...	291,000	257,000	+ 34,000	1,423,000	1,295,000	+ 128,000
Goods-train traffic ...	629,000	557,000	+ 72,000	3,060,000	2,883,000	+ 177,000
Total receipts	886,000	805,000	+ 81,000	4,341,000	4,117,000	+ 224,000
G.W.R. (3,737 mls.)						
Passenger-train traffic...	161,000	156,000	+ 5,000	802,000	792,000	+ 10,000
Merchandise, &c. ...	201,000	186,000	+ 15,000	975,000	920,000	+ 55,000
Coal and coke ...	127,000	120,000	+ 7,000	630,000	593,000	+ 43,000
Goods-train traffic ...	328,000	306,000	+ 22,000	1,611,000	1,513,000	+ 98,000
Total receipts	489,000	462,000	+ 27,000	2,413,000	2,305,000	+ 108,000
S.R. (2,147 mls.)						
Passenger-train traffic...	255,000	247,000	+ 8,000	1,293,000	1,251,000	+ 42,000
Merchandise, &c. ...	54,500	51,500	+ 3,000	282,000	282,500	— 500
Coal and coke ...	35,500	27,500	+ 8,000	186,000	172,500	+ 13,500
Goods-train traffic ...	90,000	79,000	+ 11,000	468,000	455,000	+ 13,000
Total receipts	345,000	326,000	+ 19,000	1,761,000	1,706,000	+ 55,000
Liverpool Overhead ... (6½ mls.)	1,382	1,104	+ 278	6,970	5,961	+ 1,009
Mersey (4½ mls.) ...	4,250	4,030	+ 220	22,251	21,314	+ 937
*London Passenger Transport Board ...	558,100	557,800	+ 300	17,975,600	17,891,100	+ 84,500
IRELAND						
Belfast & C.D. pass. (80 mls.)	1,631	1,622	+ 9	8,591	8,170	+ 421
,, ,, goods	391	499	— 108	2,051	2,241	— 190
,, ,, total	2,022	2,121	— 99	10,642	10,411	+ 231
Great Northern pass. (543 mls.)	7,900	7,500	+ 400	39,700	36,450	+ 3,250
,, ,, goods	8,450	8,700	— 250	40,000	42,350	— 2,350
,, ,, total	16,350	16,200	+ 150	79,799	78,800	+ 900
Great Southern pass. (2,076 mls.)	28,252	27,236	+ 1,016	138,866	131,375	+ 7,491
,, ,, goods	36,210	37,742	— 1,532	207,426	214,261	— 6,835
,, ,, total	64,462	64,978	— 516	346,292	345,636	+ 656

* 32nd week (before pooling)

British and Irish Railway Stocks and Shares

Stocks	Highest 1937	Lowest 1937	Prices Feb. 9, 1938	Prices Rise/Fall
G.W.R.				
Cons. Ord. ...	67⅜	55¾	63	−¾
5% Con. Prefce. ...	127	108	117½	—
5% Red.Pref.(1950)	113	109	110½	—
4% Deb.	113⅝	102½	109½	—
4½% Deb.... ...	118	106	110½	—
4½% Deb.	124½	112	117½	—
5% Deb.	136½	122¾	129½	—
2½% Deb.... ...	76	64	68½	—
5% Rt. Charge ...	133 7/16	118	126½	—
5% Cons. Guar. ...	133¾	116½	127	—
L.M.S.R.				
Ord.	36⅛	25⅝	27	−½
4% Prefce. (1923)	82½	65¾	68	—
4% Prefce. ...	92½	77¾	81½	+1½
5% Red.Pref.(1955)	107¾	102	103	—
4% Deb.	108	99¼	103½	—
5% Red.Deb.(1952)	117½	111	113½	—
4% Guar. ...	104	95⅞	102	—
L.N.E.R.				
5% Pref. Ord. ...	12½	6¾	7½	−¼
Def. Ord.	6¼	3⅝	3¾	−⅛
4% First Prefce.	79½	63	65½	—
4% Second Prefce.	31½	21	24½	−½
5% Red.Pref.(1955)	101¼	89¾	96½	—
4% First Guar. ...	103	91⅞	95½	—
4% Second Guar.	97⅝	85½	89	—
3% Deb.	84⅛	74	77½	—
4% Deb.	107¼	98½	102½	—
5% Red.Deb.(1947)	113½	106½	110½	—
4½% Sinking Fund Red. Deb.	110 5/16	105½	107	—
SOUTHERN				
Pref. Ord.... ...	98⅝	83½	84	—
Def. Ord.	27⅞	16¾	21	+½
5% Pref.	126 1/16	105 13/16	114½	—
5% Red.Pref.(1964)	118	110¼	113½	—
5% Guar. Prefce.	133¾	116¾	126½	−½
5% Red.Guar.Pref. (1957)	118½	111½	115	—
4% Deb.	112	101¼	107½	—
5% Deb.	135¼	123½	127½	—
4% Red. Deb. 1962–67	113	105	106½	—
BELFAST & C.D.				
Ord.	5	4	4½	—
FORTH BRIDGE				
4% Deb.	106	99½	100½	—
4% Guar. ...	105¾	99	100½	—
G. NORTHERN (IRELAND)				
Ord.	11	5	5¼	+¼
G. SOUTHERN (IRELAND)				
Ord.	50	21½	23	−1
Prefce.	61	34	33½	—
Guar.	94¾	69½	70¼	—
Deb.	95	82⅛	83	+¼
L.P.T.B.				
4½% "A" ...	123¾	110½	118½	—
5% "A" ...	135	121½	128½	—
4½% "T.F.A." ...	108¾	104	106	—
5% "B" ...	125	114½	121½	—
"C"	99¾	75	81	+½
MERSEY				
Ord.	42⅝	22	23*	+1
4% Perp. Deb. ...	103	96¾	100	—
3% Perp. Deb. ...	77⅝	74½	74½	—
3% Perp. Prefce.	68¾	61¼	63½*	−2

* ex. dividend

CONTRACTS AND TENDERS

The Metropolitan-Cammell Carriage & Wagon Co. Ltd. has received a contract from the Liverpool Corporation for the supply of 80 20-ton all-steel hopper-bottomed coal wagons for the use of the Liverpool Electricity Supply Department, and similar to those supplied on several previous occasions to this corporation by the same builder.

Beyer-Peacock & Co. Ltd., has received an order from the Peruvian Corporation for one 2-8-0 type locomotive and tender for service on the Peruvian Southern Railway.

A. & J. Inglis Limited has received a contract from the L.N.E.R. for overhauling and painting the paddle steamships *Waverley*, *Marmion*, and *Lucy Ashton*.

The Fairfield Shipbuilding & Engineering Co. Ltd. has received a similar contract from the L.N.E.R. for overhauling and painting the paddle steamship *Jeanie Deans*.

The Westinghouse Brake & Signal Co. Ltd. has received an order from the Chinese Government Purchasing Commission on behalf of the Ministry of Railways, China, for the supply of a quantity of signalling materials required for the Canton-Hankow Railway.

Usines et Acieries Allard has received an order from the Argentine North Eastern Railway for 100,000 mild steel dogspikes.

Usines et Acieries Allard has also received an order from the Midland Uruguay Railway for 40 tons of mild steel dogspikes.

Vickers (India) has received orders from the Indian Stores Department for 40 locomotive crank axles.

Leyland Motors Limited has received orders from Western S.M.T. Co. Ltd. for 30 rear-entrance passenger bus bodies.

The Monometer Manufacturing Co. Ltd. has recently despatched dies to India in completion of an order placed by the East Indian Railway Administration, which is installing a complete Monometer whitemetalling plant, including conveyor oven, tinning bath, pressure casting machine, and white-metal melting and alloying furnace, arranged for fuel-oil firing.

H. J. Skelton & Co. Ltd. has received an order from the Egyptian State Railways Administration for the supply of round mild steel (Ref. No. E.S.R. 301G8L-1,406). Total value, £1,938. Delivery Quay, Gabbary.

Bochumer Verein A.G. has received an order from the Madras & Southern Mahratta Railway, to the inspection of Messrs. Rendel, Palmer & Tritton, for 1,000 volute springs.

Barrow Haematite Steel Co. Ltd. has received an order from the Great Western of Brazil Railway for 750 pairs of steel fishplates for 50-lb. rails.

Cowans, Sheldon & Co. Ltd. has received an order from the Buenos Ayres Great Southern Railway for two 80-ft. dia. locomotive turntables.

Locomotives for India

Carters Merchants Limited, on behalf of Skoda Works, has received an order from the Madras & Southern Mahratta Railway Administration for 10 Class XD superheated broad-gauge 2-8-2 light goods locomotives, to be supplied to the inspection of Messrs. Rendel, Palmer & Tritton.

Hurst, Nelson & Co. Ltd. has received an order from the Jodhpur Railway Administration to the inspection of Messrs. Rendel, Palmer & Tritton, for one bogie carriage underframe, I.R.C.A. standard type, 56 ft. 6 in. long over headstocks and 7 ft. 5 in. wide over solebars, complete with wheels and axles and hand and vacuum brakegear, and for service on the metre gauge.

R. A. Lister & Co. Ltd. has received an order from the Bengal-Nagpur Railway Administration for 15 Lister auto trucks.

The Great Western Railway announces the following works to be undertaken :—

Eight road/rail milk tank trailer trucks are to be constructed for the Co-operative Wholesale Society's milk traffic from Cricklade, Melksham, Gloucester, and Ffairfach.

The bridge carrying the Eastern Valleys line over the Vale of Neath line near Pontypool (Crane Street) is to be reconstructed.

The company will, at the request of the Gellygaer Urban District Council, widen and strengthen Shingrig Bridge over the Taff Vale Extension line near Llancaiach, in connection with its reconstruction.

At the expense of the Torquay Corporation the company will construct a footbridge on the northern side of Shiphay Bridge, near Torquay, thus permitting the widening of the public road over this bridge.

WORKS AT VARIOUS STATIONS AND DEPOTS

Bridport and Evershot.—The pumping plant at Bridport consists of a pump and vertical engine, to which steam is supplied by coupling up a locomotive as necessary, and the pump at Evershot is driven by an oil engine. Both these pumps are to be converted to electric drive and the Bridport pump is to be repaired.

Severn Tunnel Pumping Plant.—The Severn tunnel pumping plant has to be in continual use, and for this reason it has not been possible to make a thorough examination of the chimney for the Lancashire boilers in No. 1 House, Sudbrook, since it was erected fifty years ago. To enable this to be done, and to have a stand-by in case of emergency, a duplicate chimney is to be built.

Three of the dead-end sidings in the Acton down marshalling yard are to be converted into loop sidings to enable the constantly growing traffic to be handled more expeditiously.

A loading bank is to be provided at Hall Green, suitable for end-on and side loading, principally to deal with a heavy traffic in electric street-refuse vehicles, which will pass as soon as suitable facilities are available.

The staff accommodation at Taunton is to be re-arranged and the telegraph office extended. Additional siding accommodation is to be provided to deal with traffic for the Engineering depots.

A 12-ton cart weighbridge is to be installed at Midgham to meet the need for weighing facilities at this station.

D. Wickham & Co. Ltd. has received an order from the Argentine State Railways Administration for two No. 8A petrol-driven permanent-way inspection trolleys.

The Associated Equipment Co. Ltd. has received orders from the Sheffield Corporation for two Regent passenger vehicles, and from the London Passenger Transport Board for two petrol-engined Monarch goods vehicles.

Heatly & Gresham Limited has received an order from the Bombay, Baroda & Central India Railway Administration, to the inspection of Messrs. Rendel, Palmer & Tritton, for one complete vacuum brake testing plant.

Taylor Brothers & Co. Ltd. has received an order from the Entre Rios Railways for 80 steel axles and 160 steel tyres for carriages and wagons.

Suren Piras & Co. has received an order from the Indian Stores Department (Engineering Section) for seven forged locomotive crank axles.

Ruhrstahl A.G. has received an order from the Madras & Southern Mahratta Railway Administration for 150 locomotive tyres, to be supplied to the inspection of Messrs. Rendel, Palmer & Tritton.

Tenders are invited by the Egyptian State Railways Administration, receivable at the General Management, Cairo station, by March 12, for the supply of 3,500/9,000 metric tons of rails, and receivable by March 19 for the supply of 1,000/3,000 metric tons of screw-spikes, 230/700 metric tons of saddles, and 175/500 metric tons of fishplates.

The South African Railways & Harbours Administration is calling for tenders to be presented in South Africa by April 4 and 11 for the supply and delivery of passenger and goods motor vehicles of from three ton to 10-12 tons ; and for tenders receivable by April 11 for the supply and delivery of a number of light and heavy industrial tractors and tractors of the mechanical horse type.

Tenders are invited by the North Western Railway of India, receivable in the office of the Controller of Stores, Lahore, by March 1, for the supply of a number of mobile trolleys.

Tenders are invited by the Chief Controller of Stores, Indian Stores Department (Engineering Section), New Delhi, receivable by March 16, for the supply of the following machines and equipment required for the G.I.P. Railway at Matunga, Bombay : 10 double and 30 single smith's hearths ; two fan blowers ; one sand blasting machine ; one die sinking vertical milling machine ; one axle journal re-turning lathe for carriage and wagon wheels and one wet tool grinder.

A Bill authorising the Ministry of Public Works to spend about £2,650,000 on railway rolling stock is to be submitted to the National Assembly when the Turkish Parliament reopens on March 2, states *The Daily Mail*, adding also that it is understood the intention is to purchase about 90 locomotives costing something over £1,000,000, while the balance of the sum to be provided is to be spent on carriages and wagons.

XUM

LEGAL AND OFFICIAL NOTICES

In the Court of the Railway Rates Tribunal.

Road and Rail Traffic Act, 1933.

Agreed Charges.

NOTICE IS HEREBY GIVEN that Applications for the approval of Agreed Charges under the provisions of Section 37 of the Road and Rail Traffic Act, 1933, short particulars of which are set out in the Schedule hereto, have been lodged with the Railway Rates Tribunal.

The Procedure to be followed in regard to the inspection of the said Applications and the filing of Notices of Objections is that published in the *London Gazette* of 28th July, 1936.

Printed copies of the Procedure can be obtained from the Railway Rates Tribunal, Bush House, Aldwych, London, W.C.2.

Notices of Objection to any of the said Applications must be filed on or before the 1st March, 1938.

A copy of each Application can be obtained from Mr. G. Cole Deacon, Secretary, Rates and Charges Committee, Fielden House, Great College Street, Westminster, London, S.W.1, price 1s. post free.

T. J. D. ATKINSON,
Registrar.

4th February, 1938.

Number of Application	Name of Trader and General Description of Traffic
1938—No. 71	ACME WRINGERS LIMITED, David Street, Glasgow, S.E.; Washing Machines, Wringing Machines, Stands and Table Tops.
1938—No. 72	WM. COLLINS, SONS & CO. LTD., 144, Cathedral Street, Glasgow, C.4.; Books, Magazines, Papers, etc. *Applicable also to traffic consigned by two Associated or Subsidiary Companies.*
1938—No. 73	THOMAS HEDLEY & CO. LTD., Phœnix Buildings, Collingwood Street, Newcastle-on-Tyne; Soap and Candles, ex London.
1938—No. 74	J. SMITH HARGREAVES & CO. LTD., 8, New Brown Street, Manchester; Towelling and Shirting. *Applicable also to traffic consigned by one Associated or Subsidiary Company.*
1938—No. 75	R. D. WADDELL LIMITED, Napiershall Street, Glasgow, N.W.; Confectionery, Eggs, Groceries, etc. *Applicable also to traffic consigned by two Associated or Subsidiary Companies.*
1938—No. 76	R. D. WADDELL LIMITED, Napiershall Street, Glasgow, N.W.; Bacon, Cooked Meat, etc. *Applicable also to traffic consigned by two Associated or Subsidiary Companies.*
1938—No. 77	THE NEW IMPERIAL MOTORS LIMITED, Spring Road, Hall Green, Birmingham; Motor Bicycles.
1938—No. 78	WILKINSON AND WARBURTON LIMITED, Caressa House, King Street, Leeds; Clothing and Textiles.
1938—No. 79	S. A. SQUIRRELL & CO., Colton Street, Leicester; Boots and Shoes.
1938—No. 80	WILLSONS (LONDON AND PROVINCES) LIMITED, 10–18, Clifton Street, Finsbury, London, E.C.2; Blouses, Frocks, Hats, Millinery, etc.
1938—No. 81	THE HALLAMSHIRE VINEGAR CO. LTD., Farfield Road, Neepsend, Sheffield, 3; Vinegar, Pickles and Sauces.
1938—No. 82	THE GENERAL AGENCY LIMITED, 50, Bothwell Street, Glasgow, C.2; Thread, Needles, Silk Waste, etc.
1938—No. 83	THE ORIENTAL FIBRE MAT AND MATTING COMPANY, Vorda Works, Highworth, Wilts; Floor Coverings.
1938—No. 84	THE "Z" FURNISHINGS COMPANY, 41, Grainger Street, Newcastle-on-Tyne, 1; Folding Tables.
1938—No. 86	LILLEY & SKINNER LIMITED, King's Cross, London, N.1; Boots, Shoes, Hosiery, etc.
1938—No. 87	J. PULLAR & SONS LTD., Perth; Dyed and Cleaned Goods. *Applicable also to traffic consigned by one Associated or Subsidiary Company.*
1938—No. 88	RICHARD BONDY LIMITED, 4–5, Bonhill Street, Tabernacle Street, London, E.C.2; Carpets, Rugs, Drapery, etc.
1938—No. 89	CORNBROOK CHEMICAL CO. LTD., Stockport; Colours and Lead Acetate.
1938—No. 90	G. T. CULPITT & SON LTD., Southgate Grove, Islington, London; Cake Ornaments, etc.
1938—No. 91	THE EMU WINE CO. LTD., Emu House, St. Leonards Street, Bromley-by-Bow, London, E.3; Returned Empties.
1938—No. 92	THE FIBRE CASE CO. LTD., 36–38, Peckham Road, London, S.E.5; Fibre Cases, etc.
1938—No. 93	GILDER & MONNICK LIMITED, Argall Avenue, Staffa Road, Leyton, E.; Furniture, Fancy Goods, Glassware, etc.
1938—No. 94	THE "KILLGERM" CO. LTD., Cleckheaton, Yorks; Disinfectants, etc.
1938—No. 95	A. MACNAIR & CO. LTD., Dolphin Street, Ardwick Green, Manche-ter, 12; Gum, Spirit Varnish, Cellulose Lacquer, etc.
1938—No. 96	A. MACNAIR & CO. LTD., Dolphin Street, Ardwick Green, Manchester, 12; Returned Empties.
1938—No. 97	NEWBALL & MASON LIMITED, Nottingham; Confectionery, Cordials, Silicate of Soda, etc.
1938—No. 98	RAPIDO PADDING & CURLED HAIR MANUFACTURERS LIMITED, Angel Road, Edmonton, London, N.18; Hair and Fibre Paddings, etc.
1938—No. 99	ROTHSCHILD AND BAKER, Summer Row Works, Birmingham, 3; Invalid Chairs, Perambulators, Toys, etc.
1938—No. 100	JOHN SHAW & SONS (YARNS) LTD., Brookroyd Mills, Stainland, Nr. Halifax; Woollen and Worsted Yarn.
1938—No. 101	W. H. SMITH & SON LTD., Strand House, London, W.C.2; Books and Stationery, etc.
1938—No. 102	THE STANDARD CHECK BOOK CO. LTD., Standard Works, Midsomer Norton, Somerset; Paper Bags, etc.
1938—No. 103	THOMAS & EVANS LIMITED, Porth, South Wales; Wooden Boxes.
1938—No. 104	THE WELTON BAG CO. LTD., Midsomer Norton, Somerset; Paper Bags, etc.
1938—No. 105	WRIGHT, BINDLEY & GELL, LIMITED, Percy Road, Greet, Birmingham, 11; Hardware, etc. *Applicable also to traffic consigned by one Associated or Subsidiary Company.*
1938—No. 106	THE CARBORUNDUM CO. LTD., Trafford Park, Manchester; Emery Wheels, Scythe Stones, Abrasives, etc.
1938—No. 107	CARRS (BIRMINGHAM) LIMITED, Keeley Street Mills, Birmingham; Paper, etc.
1938—No. 108	COLEMAN & CO. LTD., Wincarnis Works, Norwich; "Vitacup" and Jellies.
1938—No. 109	EUGENE LIMITED, Eugene Works, Edgware Road, Hendon, N.W.9; Hair Drying and Hair Waving Machinery, Hair Lotions, Papier Sachets, etc.
1938—No. 110	SAML. HANSON & SON LTD., 14, Eastcheap, London, E.C.3; Confectionery, Groceries, etc.
1938—No. 111	HORNE BROTHERS LIMITED, 90–2, Oxford Street, London, W.1; Boots, Shoes; Clothing, etc.
1938—No. 112	HYGIENE CORPORATION LIMITED, Konnomy Works, Bedford Avenue, Trading Estate, Slough; Scouring Powders, Shoe Polish, etc.
1938—No. 113	JOHN KIDD & CO. LTD., 10 and 11, Wine Office Court, Fleet Street, London, E.C.4; Printing Ink, Rollers, Linseed Oil, etc.
1938—No. 114	E. MILES & CO., The Bacon Factory, West Street, Bristol, 2; Bacon, Cheese, Lard, Meat, etc.
1938—No. 115	NEWTON CHAMBERS & CO. LTD., Thorncliffe, Nr. Sheffield; "Izal" Toilet Rolls.
1938—No. 116	PEARCE DUFF & CO. LTD., Spa Road, London, S.E.16; Groceries, Preserves, Confectionery, Sulphate of Magnesia, etc.
1938—No. 117	THE PRUDENTIAL ASSURANCE CO. LTD., Holborn Bars, London, E.C.1; Printed Matter, Stationery, Office Equipment, Cigars and Cigarettes, etc.
1938—No. 118	THE SANITAS CO. LTD., 51, Clapham Road, London, S.W.9; Chemical Closets, Drugs and Druggists' Sundries, Floor Polish, Hardware, etc. *Applicable also to traffic consigned by one Associated or Subsidiary Company.*
1938—No. 119	WIGGINS, TEAPE AND ALEX PIRIE (SALES) LIMITED, 46-58, Mansell Street, Aldgate, London, E.1; Paper.
1938—No. 120	ASHWORTH BROWN & CO. LTD., Park Square and St. Paul's Street, Leeds, 1; Silk and Woollen Goods.
1938—No. 121	L. H. NEWTON & CO. LTD., Thimble Mill Lane, Nechells, Birmingham; Iron Bolts, Nuts, Screws and Washers.
1938—No. 122	UNITED PHOSPHATE & MALT CO. LTD., Chase Road, London, N.W.10; Liquid Glycerined Eggs. *Applicable to traffic consigned by one Associated or Subsidiary Company.*
1938—No. 123	BROOK TAVERNER & CO., Northumberland Street, Huddersfield; Woollen Goods and Pattern Books.
1938—No. 124	J. HENRY BROOKE LIMITED, 19–25, Nile Street, London, N.1; Clothing.
1938—No. 125	THE DUCHESS OF DEVONSHIRE DAIRY CO. LTD., Tiverton, Devon; Preserves and Provisions.
1938—No. 126	HOLLOWAY BROTHERS LIMITED, Stroud, Glos.; Clothing, etc.
1938—No. 127	KAYS (MANCHESTER) LIMITED, 57, Dale Street, Manchester; Costumes, Gowns and Mantles.
1938—No. 128	A. KIRKPATRICK & SONS LTD., Thornhill, Dumfriesshire; Bacon, Cooked Meats, Lard, etc.
1938—No. 129	READICUT WOOL CO. LTD., Terry Mills, Ossett; Woollen Goods, etc.
1938—No. 130	W. A. TURNER, "The Garden Factory," Stowmarket; Preserved Meat, etc.
1938—No. 131	HIGGINS, EAGLE & CO. LTD., 4 & 6, Cannon Street, London, E.C.4; Clothing, Drapery, etc.
1938—No. 132	THE DISTRIBUTORS AND TRANSPORTERS LIMITED (MESSRS. LEVER BROTHERS AND UNILEVER LIMITED DISTRIBUTING ORGANISATION), Unilever House, Blackfriars, London, E.C.4; Glycerine, ex Port Sunlight and Warrington. *Applicable to traffic consigned by twelve Associated or Subsidiary Companies.*
1938—No. 133	W. BARRATT & CO. LTD., Footshape Works, Northampton; Boots, Shoes, etc.
1938—No. 134	W. BARRATT & CO. LTD., Footshape Works, Northampton; Boots, Shoes, etc.
1938—No. 135	T. WALL & SONS LTD., The Friary, Acton, London, W.3; Sausages, Cooked Meat, Lard, etc.
1938—No. 136	THE NOTTS HOSIERY CO. LTD., 44 & 44A, Gutter Lane, Cheapside, London, E.C.2; Hosiery.

THE Minister of Transport invites applications for appointment as a Railway Employment Assistant Inspector on the staff of the Chief Inspecting Officer of Railways. The appointment, which is whole-time and pensionable, is remunerated on a scale of £350, rising by annual increments of £18 to £500 per annum. Travelling expenses on the usual Civil Service scale are paid for journeys on official business.

Candidates should have had practical operating experience on a British Railway and should be capable of holding enquiries and reporting upon accidents to railway employees.

No candidate over 50 years of age on the 1st August, 1938, can be considered. Forms of application can be obtained from the Assistant Secretary, Establishment Department, Ministry of Transport, Metropole Buildings, Northumberland Avenue, W.C.2. Applications can only be received on the recognised forms and should reach the Ministry of Transport on or before 28th February, 1938. No application can be considered unless received on the prescribed form by this date.

Canvassing through Members of Parliament or in other ways will render a candidate liable to disqualification

Crown Agents for the Colonies

COLONIAL GOVERNMENT APPOINTMENTS.

APPLICATIONS from qualified candidates are invited for the following post:—

DRAUGHTSMAN AND INSTRUCTOR required for the Mechanical Engineering Department of the Nigerian Government Railway for two tours, each of 12-24 months, with possible permanency. Salary £400 a year, rising to £720 a year. Free passages and quarters and liberal leave on full salary. Candidates, aged 25-30,

Legal and Official Notices—*(continued)*

must have served an apprenticeship as a Locomotive Engineer with a British Railway or locomotive firm, and subsequently have had experience in a drawing or designing office on the design of locomotive details. They must be Graduates of the Institution of Mechanical Engineers or possess an equivalent qualification.

Apply at once by letter, stating age, whether married or single, and full particulars of qualifications and experience, and mentioning this paper, to the CROWN AGENTS FOR THE COLONIES, 4 Millbank, London, S.W.1, quoting M/5694.

Southern Railway Company.

NOTICE IS HEREBY GIVEN that the next Annual General Meeting of the Southern Railway Company will be held at Southern House, Cannon Street Station, in the City of London, on Thursday, the 24th day of February, 1938, at 11.30 a.m., for the purpose of receiving the Accounts for the past year and transacting general business including the following matters :—

Proposed reduction of the number of Auditors from three to two; election of Auditors and the fixing of their remuneration.

AND NOTICE is hereby further given that the said Meeting will be made Special for the following purpose :—

Consideration of a draft Agreement between the Southampton Harbour Board and the Company for the use, working, maintenance and management by the Company of the Harbour Board's Tramways.

L. F. S. DAWES,
Secretary.

Waterloo Station,
London.
7th February, 1938.

Great Western Railway Company

NOTICE IS HEREBY GIVEN that the Annual General Meeting of the Proprietors of this Company will be held in London, at Paddington Station, on Wednesday, the 23rd day of February, 1938, at Half-past Eleven o'clock in the morning for the general purposes of business.

HORNE OF SLAMANNAN,
Chairman.

F. R. E. DAVIS,
Secretary.

Paddington Station,
London, W.2.
7th February, 1938.

Royal State Railways of Siam.

NOTICE.

SEALED Tenders for the supply of Rails, Rail Accessories and Points and Crossings will be received by the Superintendent of Stores, Royal State Railways of Siam, Bangkok, Siam, up to 14.00 o'clock on the 20th May, 1938, at which hour and date they will be publicly opened in the Superintendent of Stores' Office.

Blank Tender Forms are obtainable from MESSRS. SANDBERG, 40, Grosvenor Gardens, London, S.W.1, and 25, Broadway, New York City, at the price of £2 10s. 0d. and $12.50 per set respectively.

THE ADMINISTRATION,
ROYAL STATE RAILWAYS
OF SIAM

The Institute of Transport Examinations, 1938.

MARCH 1st is the closing date for the deposit of forms of entry for the Graduateship and Associate Membership examinations to be held in London and at other centres on April 28th, 29th and 30th.

Particulars of the Institute and its examinations, together with previous examination question papers (price 1s. per set, post free), and copies of the Institute Examination Guide for prospective candidates (price 2s. 6d. post free), may be obtained from the undersigned

A. WINTER GRAY,
Secretary.

15, Savoy Street,
London, W.C.2.

THE MADRAS & SOUTHERN MAHRATTA RAILWAY COMPANY LIMITED invite Tenders for :—

8 CRANK AND 6 STRAIGHT AXLES FOR LOCOMOTIVES.

Specification and Form of Tender can be obtained from the Company's Offices, 123, Victoria Street, Westminster, London, S.W.1.

Fee ONE GUINEA, *which will not be returned.*

Tenders must be submitted not later than 2 o'clock p.m. on TUESDAY, 1st MARCH, 1938.

The Directors do not bind themselves to accept the lowest or any Tender and reserve to themselves the right of reducing or dividing the order.

By Order of the Board,
G. W. V. DE RHE PHILIPE.
Secretary.

RAILWAY AND OTHER MEETINGS

Westinghouse Brake and Signal Co. Ltd.

The annual general meeting of the Westinghouse Brake & Signal Co. Ltd. was held at Winchester House, Old Broad Street, London, E.C., on February 8, the Rt. Hon. Lord Southborough, Chairman of the company, presiding.

The Secretary (Mr. J. Griffith Hall) read the notice convening the meeting and the auditors' report.

The Chairman, in moving the adoption of the report and accounts, said that the profit for the year of £275,632 compared with £260,765 last year, in itself a record. A sum of £60,060 had been brought forward from the 1936 account, so that the available profit was £335,692, against £303,432 in 1936. The improvement among the subsidiary companies had also been more than maintained, so that £15,856—the balance of the reserve for losses of subsidiary companies—had been brought back to the credit of profit and loss account. General reserve had been strengthened by £75,000, and now stood at £325,000.

Reviewing the business of the year, the Chairman said their factory had worked at maximum pressure throughout the year and very satisfactory output had been obtained; he was glad to say that the value of orders now on their books was even greater than at that time last year. In view of the very large volume of orders, they had not hesitated therefore to make arrangements still further to increase their factory's capacity. In addition to the extensions already made they were now carrying out a further programme at their factory, and, as a result, additional floor space amounting to 91,000 sq. ft. would become available during the present year.

Work on the Polish brake contract was going forward satisfactorily to all concerned. The first deliveries in connection with their contract with the Lithuanian State Railways had been made, and they were looking forward to a successful co-operation between their company and the officials of that railway.

There was ample evidence since the close of the accounts in September, 1937, to enable him to say that he could see no reason why the present financial year should not yield satisfactory results. If normal conditions prevailed in industry and there was no untoward upheaval here or abroad, he looked forward to another agreeable meeting in 1939. But they had a number of difficult problems to solve. There were heavy increased costs for raw materials and a rise in labour charges. World conditions were in fact still very unstable, and exchange restrictions, barter agreements, political influences, and general unsettlement were obviously dangerous.

The resolution was then put to the meeting and unanimously adopted.

Captain B. H. Peter, Managing Director, then reviewed the business of the year. He stated that at the present moment 66 or 67 per cent. of the Polish brake contract was completed, and the work, as it had been practically from the beginning was six weeks ahead of time. Their company had a world-wide business. Of its record sales in 1937, 59 per cent. had been exported, to 64 countries. The building of new rolling stock for railways had naturally brought satisfactory orders. Last year a very important contract was received from the London Passenger Transport Board for their latest type of electro-pneumatic brake. Deliveries to that authority had now started very satisfactorily, and would continue for the next two years, which was the period of their programme. The same type of brake had now been adopted on several other railways for their electrified sections. The L.N.E.R. and L.M.S.R. in their latest electrifications were using this very fine electro-pneumatic brake. It was also being used on the Warsaw electrification, and recently it had been adopted by New Zealand. The brake business for road vehicles was very satisfactory indeed. The extension of the trolleybus had brought a lot of work, and the use of power brakes on other road vehicles was steadily increasing. The company was now supplying a number of brakes for trains running at 90 to 100 miles per hour.

The signalling department had been very busy indeed. During the year they received what was believed to be the largest contract for signalling a station that had ever been let in this country, and that was for signalling the York station on the L.N.E.R. In addition, they had an important order for the same railway for Darlington, and during the year a big installation at Leeds was successfully brought into use. The Southern Railway had taken a large quantity of material, and during the year a large number of important sections of their line had been fitted with the company's apparatus. In connection with the big extensions to the London Underground railways, they had very substantial orders in hand.

XUM

Railway Share Market

The week-end news from Germany tended to keep sentiment in the stock and share markets under the influence of international affairs, and, in the absence of improvement in demand, there was a fairly general movement to lower values. Nevertheless, home railway stocks attracted more attention in view of the stimulus provided by the surprisingly good dividend of the Southern Railway. The gains made by the junior stocks on Monday were not fully held, but on Wednesday the tendency was for prices to respond in view of the excellent traffic figures for the past week and the rather steadier tendency developed by markets as a whole.

Southern deferred has fluctuated around 21 since the dividend announcement. The 1½ per cent. payment was well above best estimates, which were based on the published traffic figures. The preliminary statement does not give sufficient information as to the reason for the unexpectedly good increase in net receipts, and the accounts are awaited with considerable interest in the market. Probably ancillary business benefited considerably from Continental traffic and other factors. The railway's preferred ordinary stock transferred around 84½ and would seem to be undervalued by several points.

Great Western and L.M.S.R. ordinary were more active around 63¾ and 27 respectively, pending Friday's dividend statements. There is still considerable divergence of opinion as to the L.M.S.R. decision, but it is generally agreed that the 1923 preference at 68, and the 4 per cent. preference at 81, are moderately priced. The disposition is for the market to be more hopeful of the Great Western dividend being stepped up to 4 per cent., in which case a rise of several points in the price would apparently be justified. L.N.E.R. second preference was relatively dull on the view that the stock is probably fully valued, assuming the dividend is not increased above 1½ per cent. The decision is not due in this case until February 18. The large increase of £81,000 shown by the past week's traffics tended to bring in buyers, however, and the first preference changed hands up to 66½. London Transport "C" had a steady appearance at 81¼, aided by satisfaction with the interim payment.

Argentine railway stocks were unresponsive to the news that no change is to be made in the official Argentine exchange rates. The ordinary stocks were relatively steady, but preference and debenture issues were again lower, although there would seem little justification for this, other than surrounding market conditions. The debentures of the B.A. Gt. Southern, Central Argentine and B.A. Western are all quite well covered as to interest, and they received their payments regularly even during the period of world trade depression. Elsewhere, there was a moderate improvement in United of Havana 1906 debentures, which changed hands around 9. Canadian Pacific ordinary and preference were inclined to improve. There are hopes of a moderately larger dividend on the preference stock.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1937–38	Week Ending	Traffics for Week: Total this year	Traffics for Week: Inc. or Dec. compared with 1937	No. of Weeks	Aggregate Traffics to Date: Totals: This Year	Aggregate Traffics to Date: Totals: Last Year	Aggregate Traffics to Date: Increase or Decrease	Shares or Stock	Prices: Highest 1937	Prices: Lowest 1937	Prices: Feb. 9, 1938	Yield % (See Note)
South & Central America	Antofagasta (Chili) & Bolivia	834	6.2.38	£ 15,470	+ £ 660	6	£ 86,500	£ 81,150	+ £ 5,350	Ord. Stk.	29	10¼	12	Nil
	Argentine North Eastern	753	5.2.38	8,313	+ 354	32	301,578	286,618	+ 14,960	,,	19¼	6	5	Nil
	Argentine Transandine	—	—	—	—	—	—	—	—	A. Deb.	93½	60	80	5
	Bolivar	174	Jan., 1938	3,600	— 1,800	5	3,600	5,400	— 1,800	6 p.c. Deb	9½	5	8½	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds.	17	9	9½	5¼
	Buenos Ayres & Pacific	2,806	5.2.38	108,514	— 9,491	32	2,624,941	2,668,715	— 43,774	Ord. Stk.	17⅛	5½	5	Nil
	Buenos Ayres Central	190	22.1.38	$100,000	— $53,800	29	$3,732,400	$4,264,106	— $531,706	Mt. Deb.	41½	18	17½	Nil
	Buenos Ayres Gt. Southern	5,084	5.2.38	238,151	— 11,725	32	4,461,289	4,291,147	+ 170,142	Ord. Stk.	3⅜	13½	15	Nil
	Buenos Ayres Western	1,930	5.2.38	44,417	— 17,059	32	1,456,018	1,488,353	— 32,335	,,	3⅜	11¼	10	Nil
	Central Argentine	3,700	5.2.38	121,461	— 64,857	32	4,024,549	4,691,355	— 666,806	,,	3¼	10⅝	9½	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	20½	4½	5	Nil
	Cent. Uruguay of M. Video	980	22.1.38	20,176	+ 926	30	509,841	505,132	+ 4,709	Ord. Stk.	67⅜	2	2½	Nil
	Cordoba Central	1,218	29.1.38	24,880	— 6,390	31	920,260	1,004,830	— 84,570	Ord. Inc.	6¼	1½	1½	Nil
	Costa Rica	188	Dec., 1937	31,844	+ 12,491	23	155,206	110,934	+ 44,272	Stk.	38	27	28½	7 9/16
	Dorada	70	Jan., 1938	17,700	+ 2,400	5	17,700	15,300	+ 2,400	1 Mt. Db.	107	108	107½	5 9/16
	Entre Rios	810	5.2.38	17,053	+ 1,774	32	460,749	423,193	+ 37,547	Ord. Stk.	19 7/16	6	5	Nil
	Great Western of Brazil	1,092	5.2.38	9,800	— 200	6	51,100	52,800	— 1,700	Ord. Sh.	⅝	1/8	1/4	Nil
	International of Cl. Amer.	794	Nov., 1937	$503,126	+ $82,245	48	$5,379,250	$4,650,651	+ $728,599	—	—	—	—	—
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	1st Pref.	2/-	1/-	1/9	Nil
	La Guaira & Caracas	22½	Jan., 1938	4,610	— 1,660	5	4,610	6,270	— 1,660	Stk.	8½	6	8½	Nil
	Leopoldina	1,918	5.2.38	20,071	— 5,529	6	100,770	116,931	— 16,161	Ord. Stk.	9¼	3	3	Nil
	Mexican	483	31.1.38	$553,800	+ $102,700	5	$1,291,800	$1,307,700	— $15,900	,,	1½	1/4	1/2	Nil
	Midland of Uruguay	319	Dec., 1937	9,910	+ 1,003	26	52,414	50,223	+ 2,191	,,	1/8	1/2	1/2	Nil
	Nitrate	384	31.1.38	9,653	+ 4,359	5	16,429	12,075	+ 4,354	Ord. Sh.	3 1/16	2	2 1/16	Nil
	Paraguay Central	274	5.2.38	$2,718,000	— $89,000	32	$101,083,000	$84,444,000	+ $16,639,000	Pr. Li. Stk	84	79¼	7 1/16	7 13/16
	Peruvian Corporation	1,059	Jan., 1938	83,749	+ 3,948	31	587,785	570,583	+ 17,199	Pref.	14⅝	4½	5	Nil
	Salvador	100	5.2.38	¢43,750	— ¢4,750	32	¢581,125	¢598,758	— ¢17,633	Pr. Li. Db	23½	21½	22½	Nil
	San Paulo	153½	30.1.38	33,433	+ 4,229	5	128,537	128,171	+ 366	Ord. Stk.	98½	56	51	9 13/16
	Taltal	160	Dec., 1937	6,185	+ 2,095	26	22,535	21,900	+ 1,635	Ord. Sh.	1 1/16	11/16	5/8	13 3/16
	United of Havana	1,353	5.2.38	36,795	— 7,869	32	576,795	565,313	+ 11,482	Ord. Stk.	5⅜	3 1/16	3	Nil
	Uruguay Northern	73	Dec., 1937	991	— 519	26	5,294	6,564	— 1,270	Deb. Stk.	10	2	3½	Nil
Canada	Canadian National	23,803	31.1.38	875,430	— 41,249	5	2,664,326	2,808,670	— 144,344	—	—	—	—	—
	Canadian Northern	—	—	—	—	—	—	—	—	4 p.c. Perp. Dbs	77	62½	71½	5 9/16
	Grand Trunk	—	—	—	—	—	—	—	—	4 p.c. Gar.	10 7/8	9 1/16	100	4
	Canadian Pacific	17,186	31.1.38	658,400	+ 8,000	5	2,063,000	2,038,800	+ 24,200	Ord. Stk.	18	7¼	7	Nil
India†	Assam Bengal	1,329	20.1.38	40,703	— 4,201	43	1,108,965	1,070,751	+ 38,214	Ord. Stk.	86	73½	81	3 11/16
	Barsi Light	202	10.1.38	5,130	+ 2,213	41	105,405	90,082	+ 15,323	Ord. Sh.	66½	46	57	8¾
	Bengal & North Western	2,107	20.1.38	76,718	— 10,348	16	839,414	862,979	— 23,565	Ord. Stk.	317	301	309	5 15/16
	Bengal Dooars & Extension	161	20.1.38	3,337	+ 52	43	119,497	107,947	+ 11,550	,,	100	84	86½	7
	Bengal-Nagpur	3,268	20.1.38	178,875	— 470	43	5,562,115	4,847,939	+ 714,176	,,	101	89	91½	4 3/8
	Bombay, Baroda & Cl. India	3,072	31.1.38	293,025	— 46,950	45	7,337,025	7,239,900	+ 97,125	,,	113	110½	111½	5 3/8
	Madras & Southern Mahratta	2,937	20.1.38	148,200	— 15,463	43	4,411,728	4,448,852	— 37,124	,,	110	105	107½	7 15/16
	Rohilkund & Kumaon	571	20.1.38	16,981	— 1,723	16	152,231	160,135	— 7,844	,,	314	302	309	5 15/16
	South Indian	2,531½	20.1.38	115,253	+ 2,208	43	3,374,374	3,234,615	+ 139,759	,,	103½	99½	100½	4¾
Various	Beira-Umtali	204	Nov., 1937	90,637	+ 21,848	9	186,351	137,294	+ 49,057	—	—	—	—	—
	Egyptian Delta	620	20.1.38	7,382	— 155	43	216,317	206,078	+ 10 239	Prf. Sh.	31/-	5/4	11/4	Nil
	Kenya & Uganda	1,625	Dec., 1937	195,953	— 9,301	52	2,710,000	2,527,158	+ 182,842	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	B. Deb.	48 1/8	43 1/2	4 6 1/2	7 1/2
	Midland of W. Australia	277	Dec., 1937	15,204	+ 401	23	84,334	82,054	+ 2,280	Inc. Deb.	98	93 1/2	93 1/2	4¼
	Nigerian	1,900	25.12.37	76,633	— 8,742	39	2,035,435	1,661,635	+ 373,800	—	—	—	—	—
	Rhodesia	2,451	Nov., 1937	428,233	+ 94,574	9	895,596	688,890	+ 206,706	—	—	—	—	—
	South Africa	13,263	22.1.38	632,167	+ 11,332	43	27,481,346	26,000 591	+ 1,480,755	—	—	—	—	—
	Victoria	4,774	June, 1937	793,223	+ 89,530	52	10,135,291	9,689,925	+ 445,366	—	—	—	—	—

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1/16.

† Receipts are calculated @ 1s. 6d. to the rupee. § ex dividend.

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the Sterling weekly receipts at the par rate of exchange has proved misleading, the amount being overestimated. The statements are based on the current rates of exchange and not on the par value.